MISSOURI BOTANICAL GARDEN

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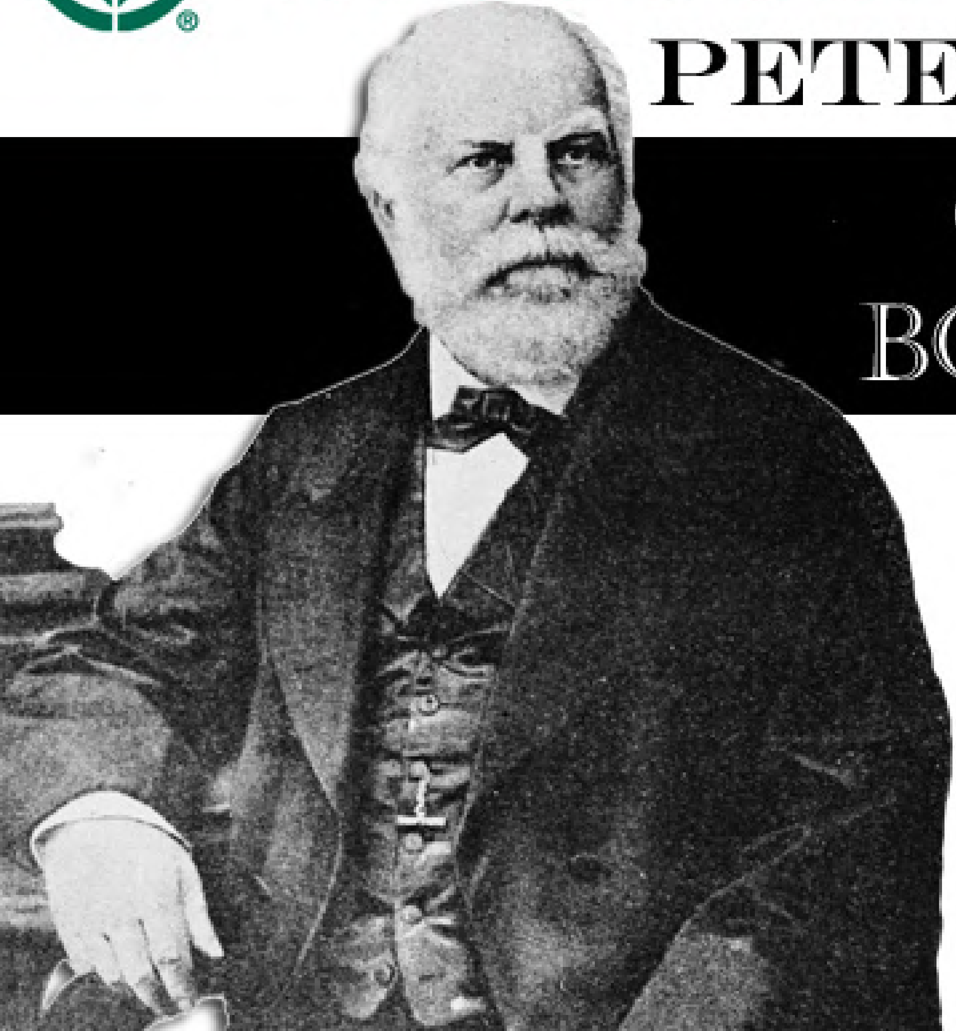


GEORGE ENGELMANN BOTANICAL NOTEBOOKS

Pagination Note:
Since many of the items lack a specific page number, the page number displayed online refers to the sequentially created number each item was given upon cataloging the materials.

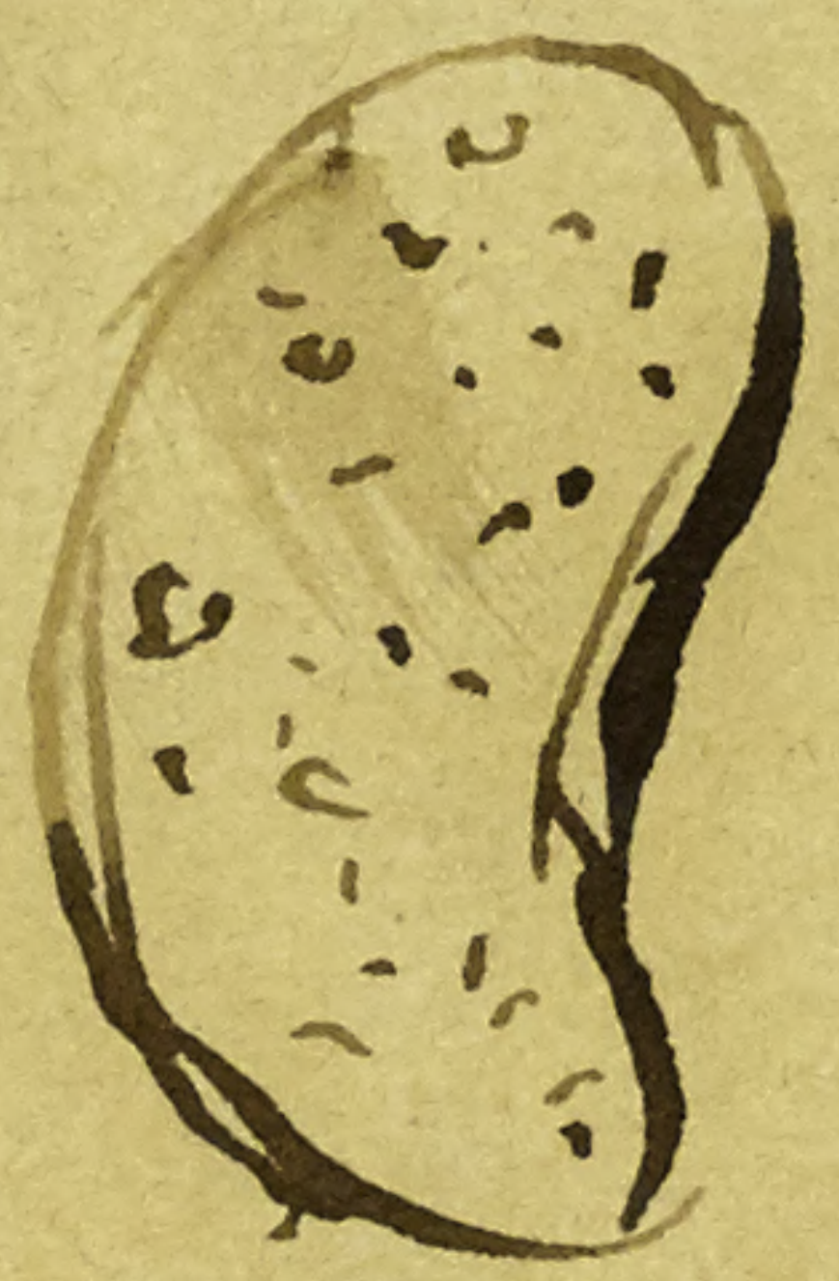
Arizonica?

Mammillaria Scheeri ? 5" high. 4" diam.

but tubercles much more slender, groove slight, not so woolly, 1 inch long, 13/34 arrangement.

16 radial & 4 central spines, [illegible]
radial pale, dark tips,
central stouter, darker, lowest one a little shorter, stouter, darker.

x 8



seed brown, scrobiculate 2 1/2 mm long.

Coues & Palmer
1865

1186

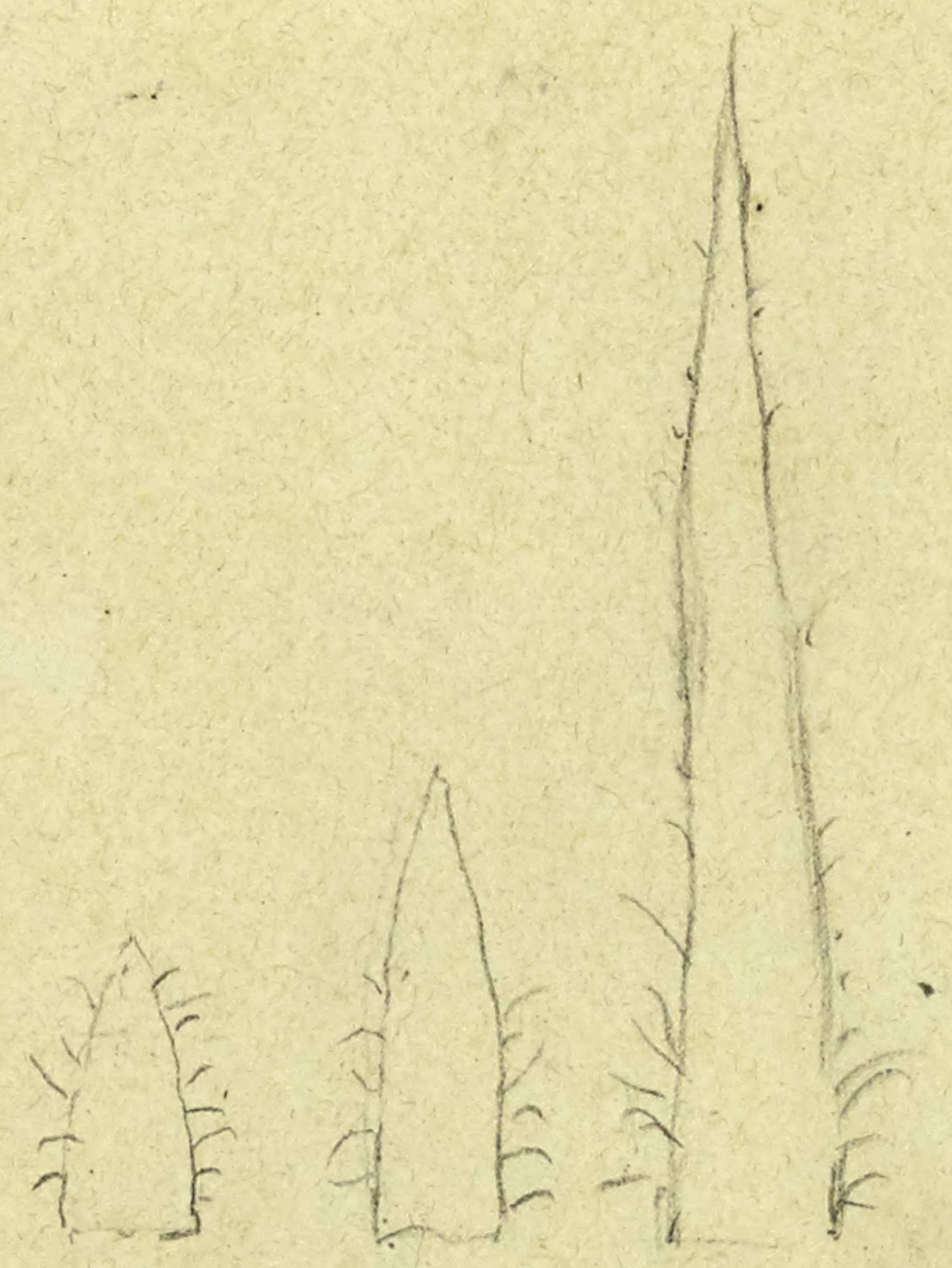
Leitch & Corlies
(DRUGGISTS)
South West Corner Fifth
and Market
Streets.

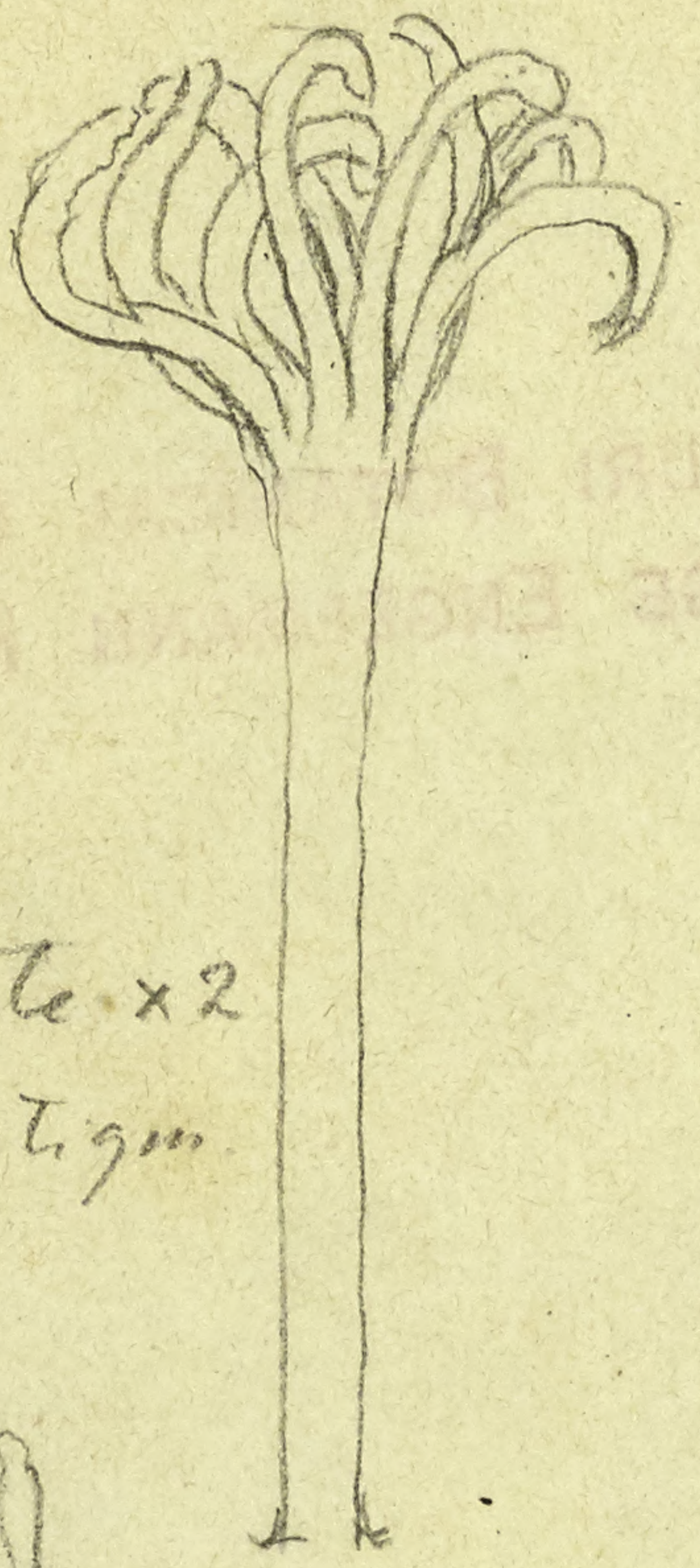
Mamillaria,

June 29 1872

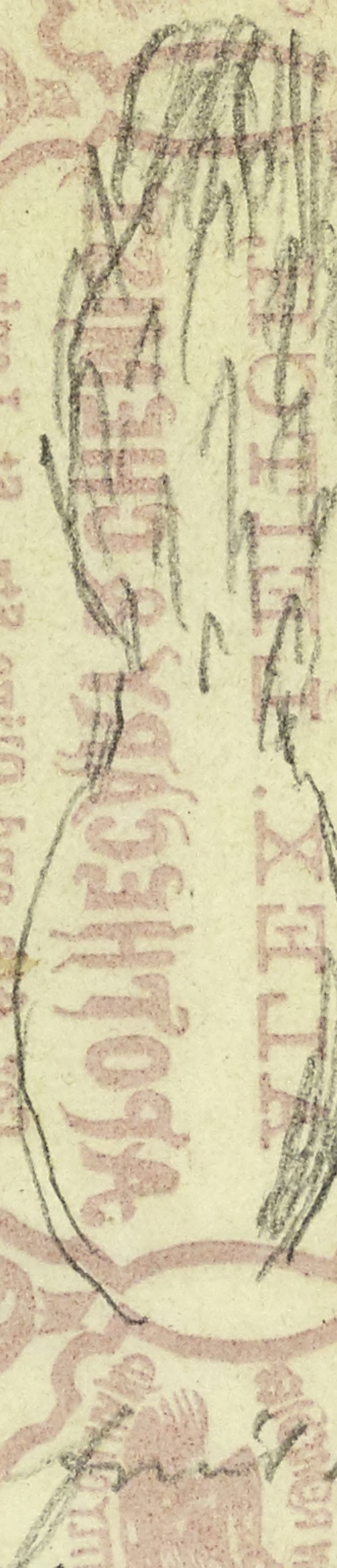
Arizona, Palmer & Coues

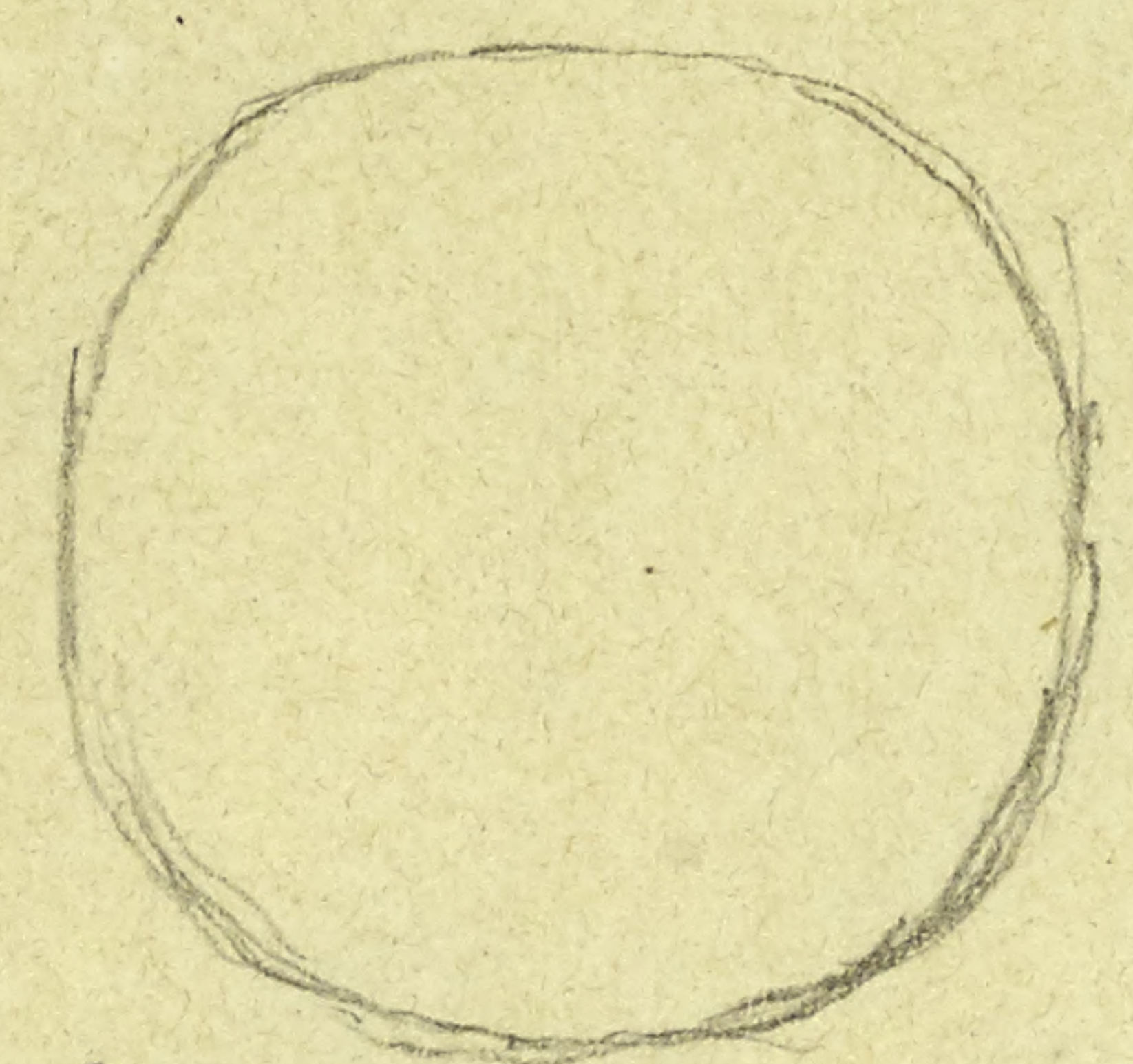
fruit with remnants of flower soaked


sepals x 2

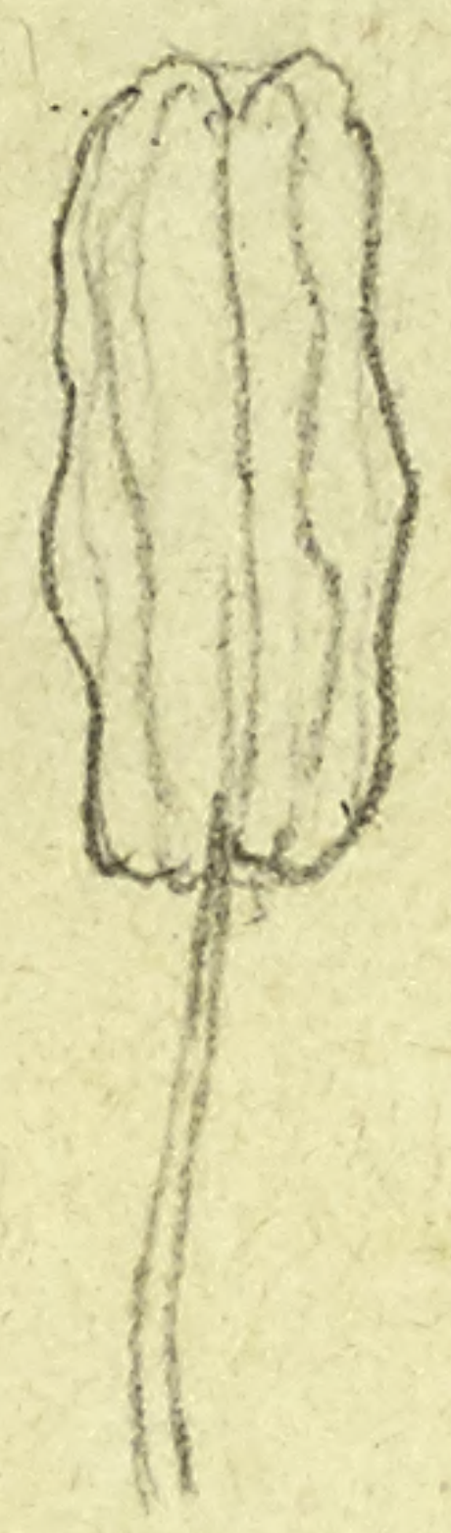

style x 2
9 stigm

petal
x 2


fruit soaked


Pollen grain x 415

no larger grains seen — but all infested by fungi


anther
x 10

1187

about 50 scarcely fringed sepals, — as many? linear petals
9 stigmata

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MISSOURI BOTANICAL GARDEN

CHEMIST A

ALEX. LEITCH,
APOTHECARY & CHEMIST,
Cor. 4th and Olive Sts., St. Louis.

ALL THE NEW REMEDIES CONSTANTLY ON HAND

"G" Dr Coues 1866 1188

~~Cereus~~ Mamillaria Arizonica Engl. near Scheerii

142-4

Rare at Whipple. Found growing singly on high dry sandy hills, in close proximity to species "F". Cereus

Three – four inches high & broad; almost globular in shape, but with a somewhat conical apex. Light green; basally brown.

The surface is very deeply divided into tubercles, the series of which wind spirally almost quite around the plant before reaching its apex. These tubercles are distinct to the very root; but basally are small, shrunken, and brown & hard. The shape of the typical ones is that of an prolate spheroid Elongated ovoid; ~~obtusely~~ those of each series a little more closely aggregated ~~than those~~ with each other than with those of the next series; but still distinct from each other to their very bases

The spines upon the apices of each tubercle are exceedingly numerous; those upon the lower portions of the plant ~~are~~ radiate from each other in a direction nearly parallel to the plant, lying closely appressed upon it, and are pure white. Those of the middle & upper portions, – or ~~the~~ majority of them at least, stand more vertically away from the plant; are longer and stouter; white only at their bases the rest of their extent being of a fine sienna red, deepening into reddish brown at their tips. The spines of each individual tubercle are so long as to project beyond the apex of the neighbouring tubercles; and lying "flatwise," form an armour that completely envelopes the plant. F. On the apex of the plant the spines

r tend toward the median axis, over which
bend ~~toward~~ each other, forming a com-
te protection ~~toward~~ to the nascent
ercles & spines enclosed beneath them

The fine ~~[illegible]~~ villosity that
rs the apex of these newest tubercles,
t of which young spines are just sprouting,
of a delicate hoary pink color.

The root is long slender, terete,
e or less filamentous; two or more
ts spring directly from the base of the
t, and quickly subdivide & ramify.
color the root is yellowish white: and much
ter and more "juicy" than in Species "I."

No signs of flowering at
date (May 2nd.) — Remains of old flowers
tral not axillary) entangled in the spines,
ack, dry & hard

Description drawn up from the above notes

globose, 3 – 4 inches in diameter,
tubercles elongated, young ones with copious pale pink wool
spines numerous, on old tubercles radiating, appressed, pale
younger ones suberect, whitish at base deep brown upwards

Living plant sent by Dr Coues: tubercles slender slightly grooved (groove
slightly woolly) 1 inch long $\frac{13}{34}$ ~~16~~ 14–21 radial ~~4~~ 3–5 central darker
fruit oval green; seed $2\frac{1}{2}$ mm long, orbiculate, brown

"G"

Fieldnotes on

~~Cereus~~ Mamillaria

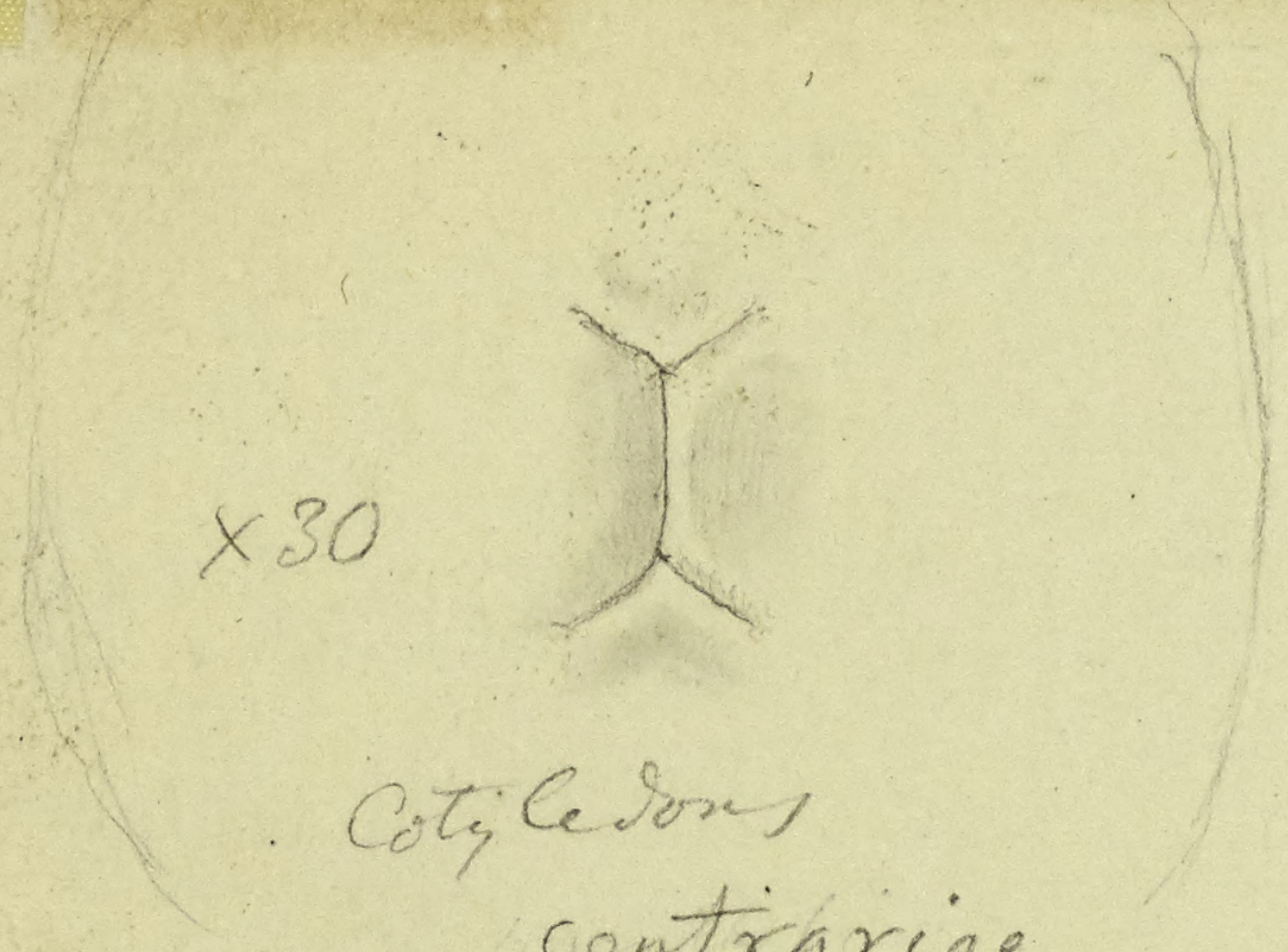
Ellvott Coues

May 2nd 1865

Dr. E. COUES U.S.A.
JAN 28 1880
Washington D.C.

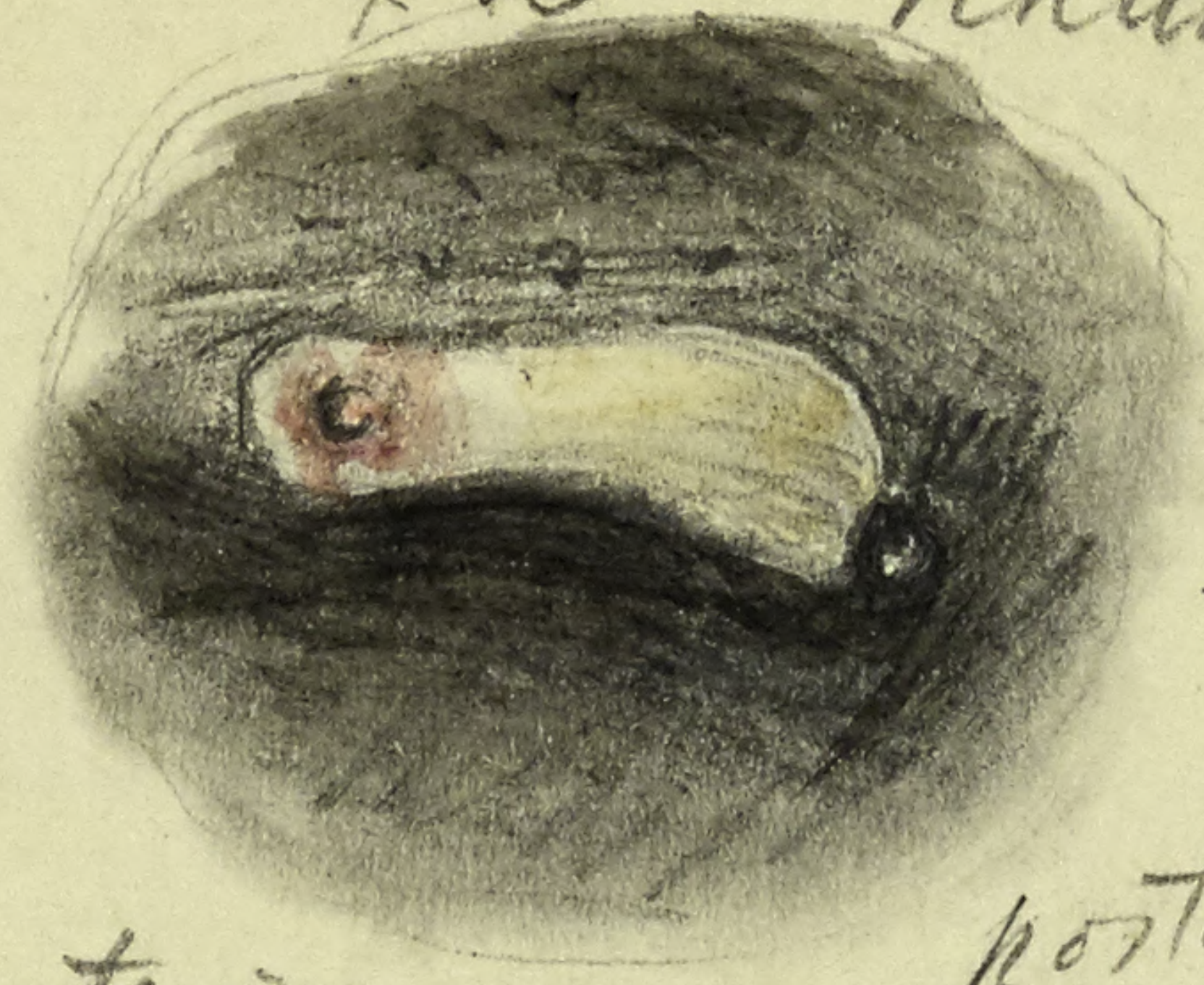
Mam. Nuttallii var caespitosa

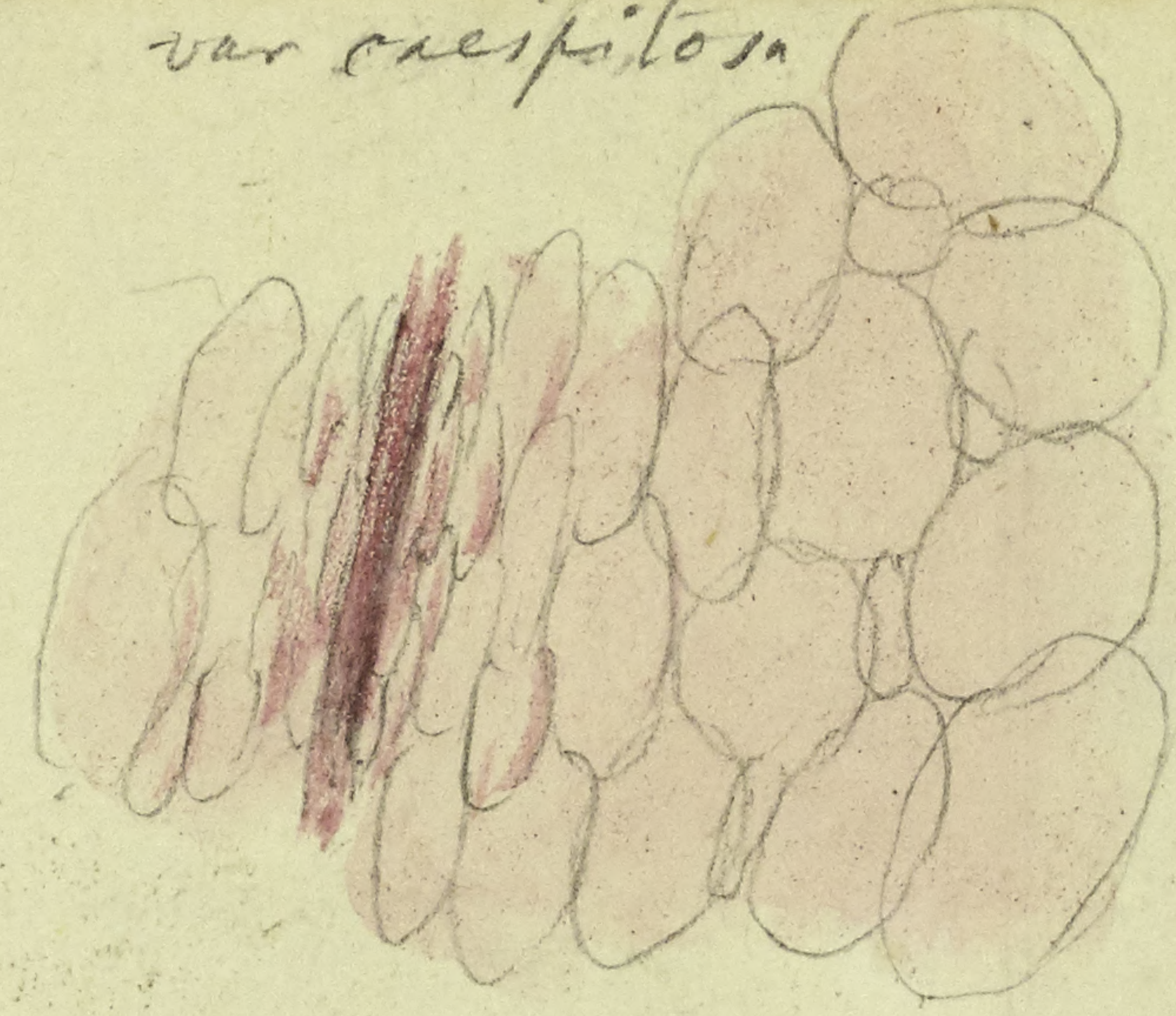
May 10. 1862



Cotyledons contrariae

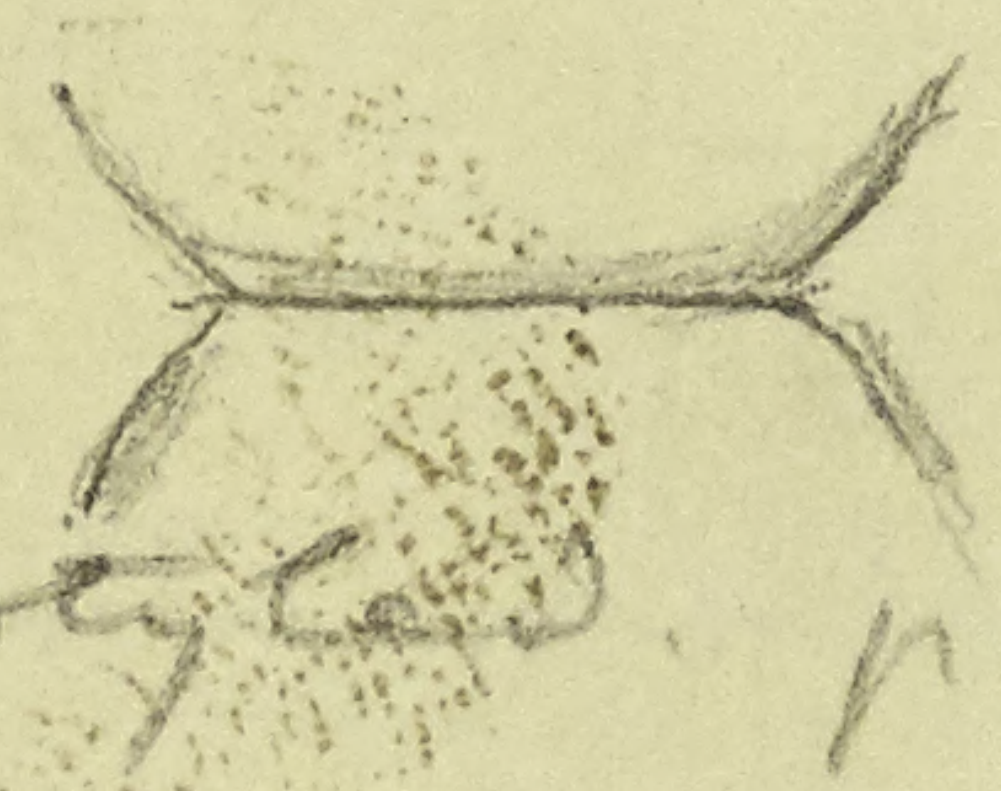
I have seen several times


x 10
hilum
anterior
posterior.



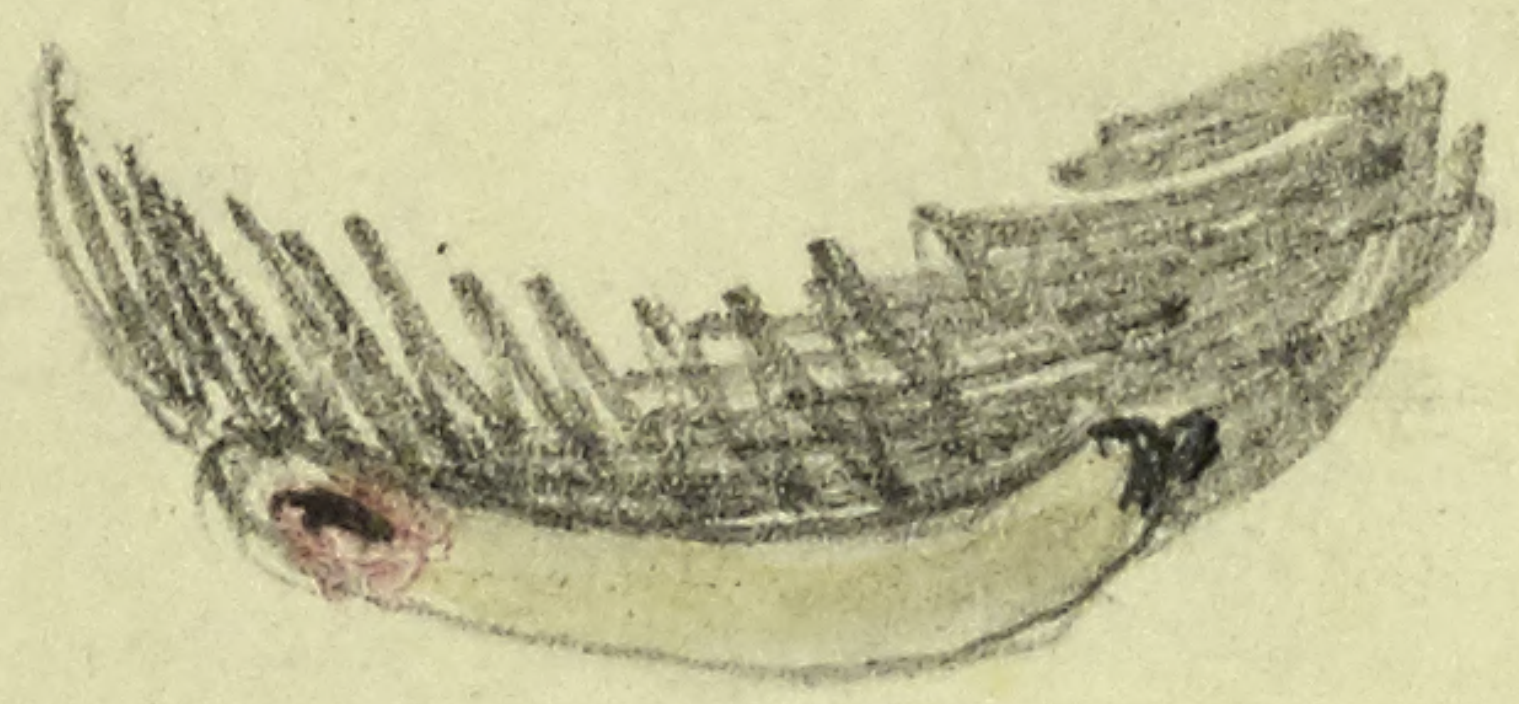
Parenchyma of fruit itself

no crystals

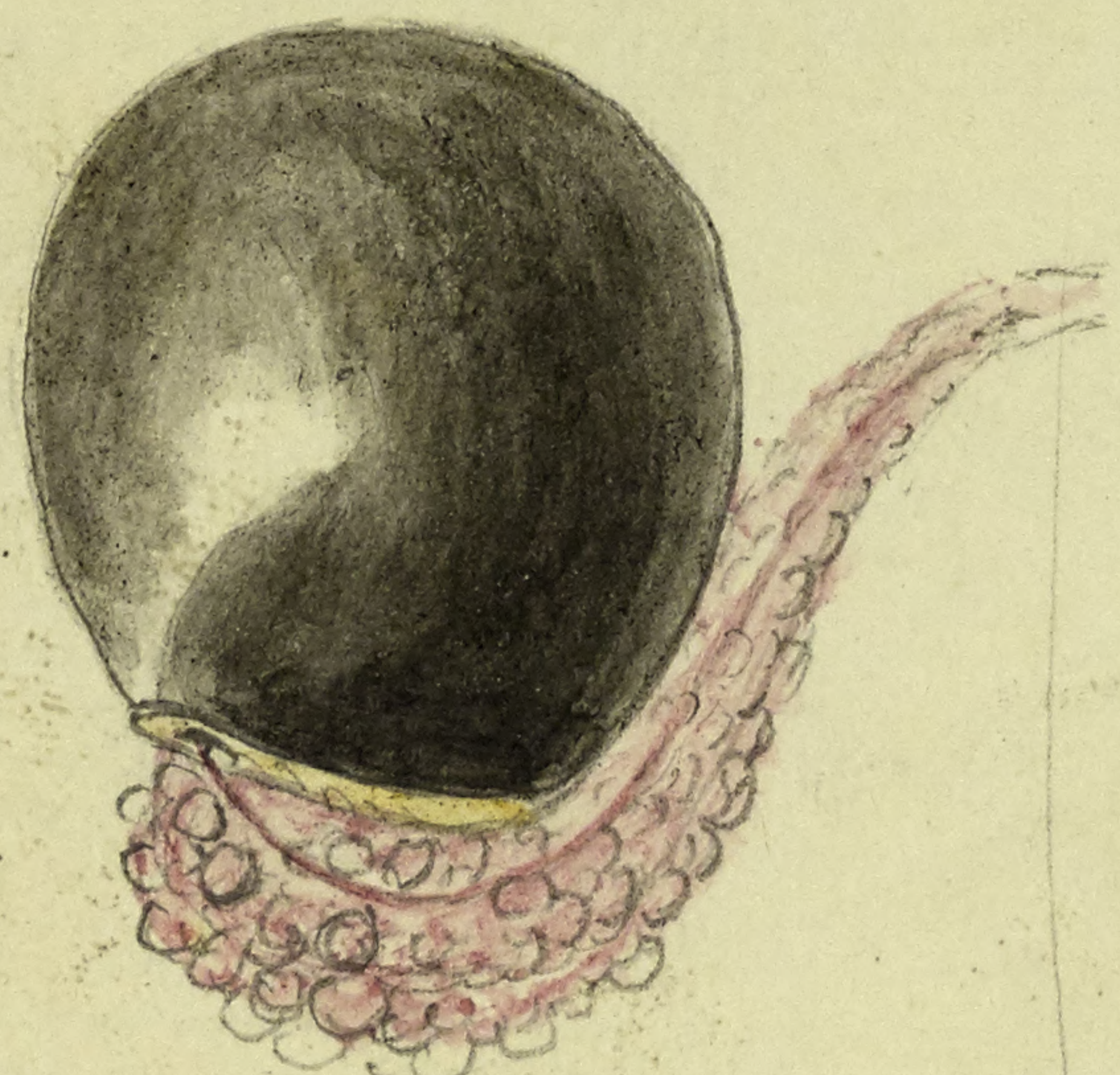


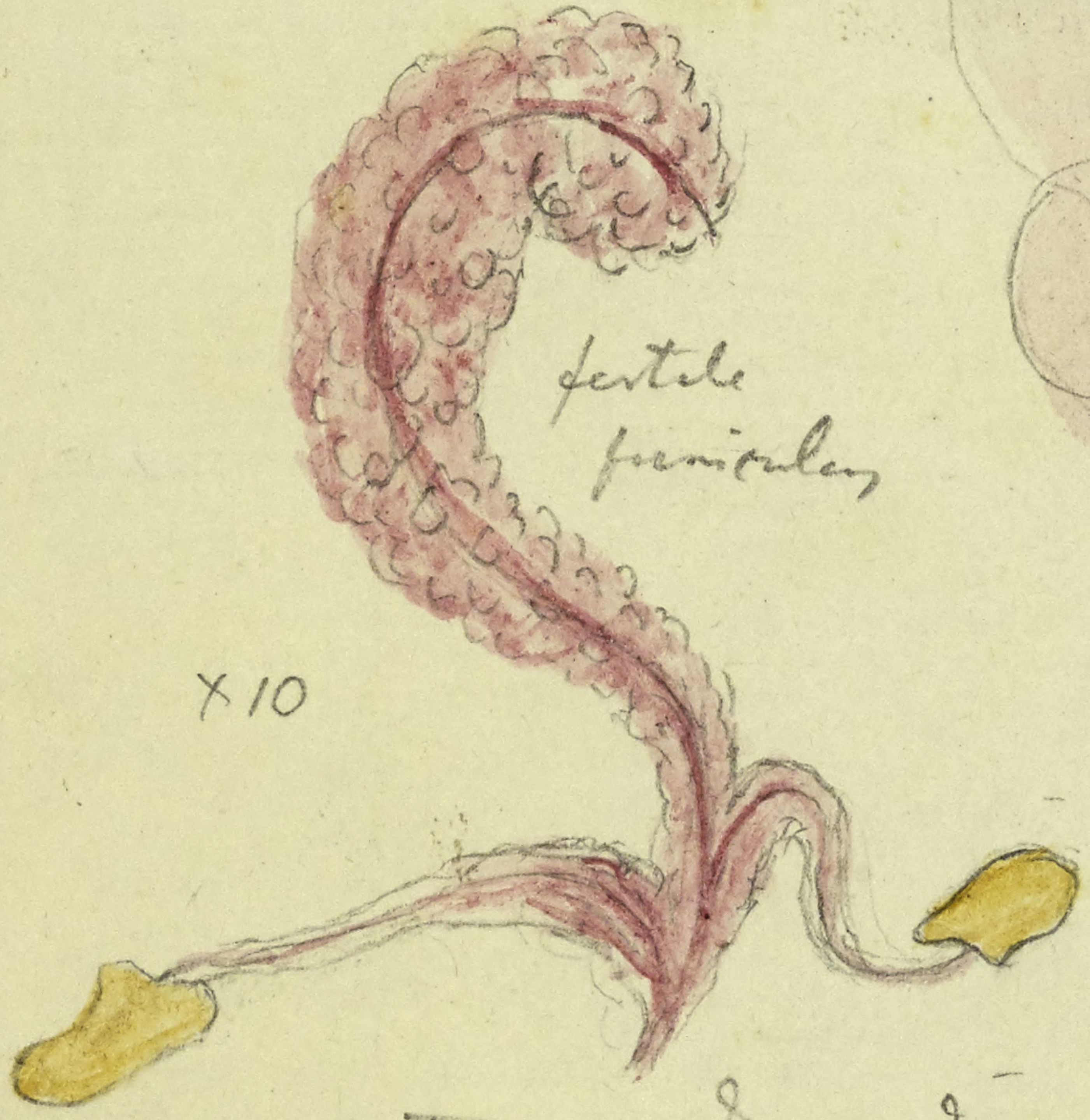
usual case

cotyled. parallelae

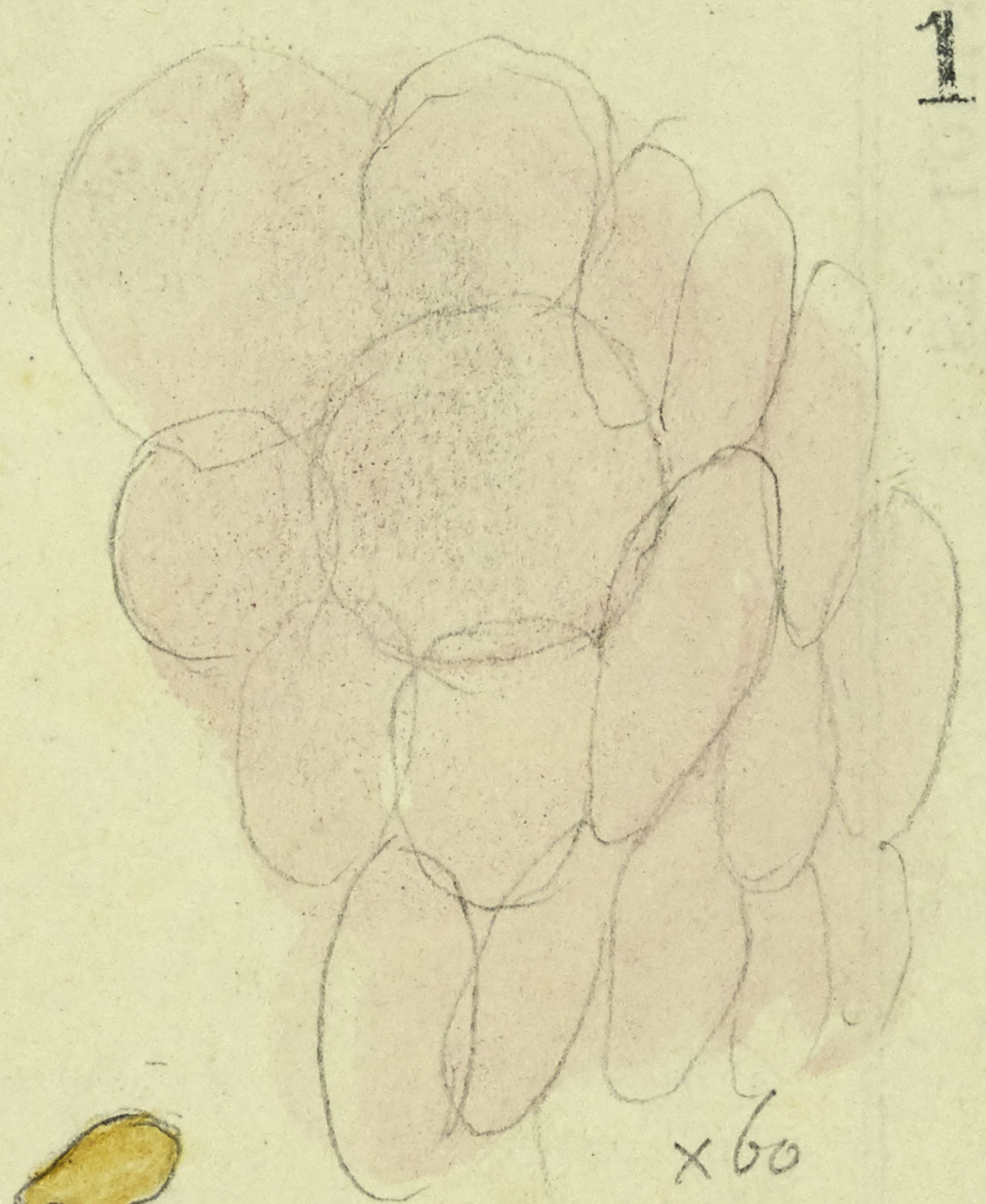


1189




x 10
fertile funiculus

abortive seeds and their funiculi



cells of funiculus

0 1 2 3 4 5 6 7 8 9 10 cm
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MISSOURI BOTANICAL GARDEN

M. W. ALEXANDER,
SOUTH-EAST CORNER OF FOURTH AND MARKET STREETS,
ST. LOUIS.

145-157

1189-A

Nuttallii = Missouriensis

THE

Gardeners' Chronicle.

SATURDAY, SEPTEMBER 1, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Sept. 3	Sale of Dutch Bulbs at Stevens' Rooms.
TUESDAY,	Sept. 4	Royal Horticultural Society: Meeting of the Fruit and Floral Committees at 11 A.M.; General Meeting at 3 P.M. Kennington Amateur Horticultural Society's Show (two days).
WEDNESDAY,	Sept. 5	Glasgow and West of Scotland Horticultural Society's Autumn Show. Sale of Dutch Bulbs at Stevens' Rooms.
THURSDAY,	Sept. 6	Carlisle International Horticultural Exhibition (three days). Sale of Imported Orchids at Stevens' Rooms (two days).
SATURDAY,	Sept. 8	Sale of Dutch Bulbs at Stevens' Rooms.

◆

THE reappearance of the CULFORD VINE SPORT—or, as it has facetiously been termed, the Culford apparition—induces us to advert once more to the subject. When it was formerly under discussion we laboured under the disadvantage of not having ourselves seen the sportive Vine, and we could only discuss the matter on general principles, and reason from the analogy afforded by other and not infrequent examples of a similar, or supposed similar, character. Lately, however, we had an opportunity of inspecting this now famous Vine, of comparing it with other rods of Trebbiano and Golden Champion growing in the same and in different houses; and lastly, thanks to Mr. GRIEVE, we have had the opportunity of carefully comparing the foliage and berries of the sport with those of the Vines just mentioned. We have thus been enabled to arrive at some conclusions, which we propose to lay before our readers, but in no dogmatic or *ex cathedrâ* spirit. The facts observed admit of more than one interpretation; and, although we have our own views as to which is the more probable, yet so little is definitely and precisely known as to the causes of these phenomena, that we are quite disposed to consider the matter as an open question.

The history of the sport in question is now pretty widely known to Grape growers. It has been given and discussed in several of the gardening periodicals, and only a short time since Mr. GRIEVE briefly recapitulated in our own columns the history of the appearances presented (see *Gardeners' Chronicle*, August 18, 1877, p. 213, fig. 46). It is therefore not necessary to dwell on this part of the subject. We propose to confine ourselves to a brief mention of what we ourselves observed on a personal inspection of the Vine in question a few days since, to the results of the comparison we were enabled to make on the spot between the several Vines named, and of the examination of the materials we were allowed by Mr. GRIEVE to bring away with us. Without going into needless minutiæ it may suffice to say that the parent rod of the Trebbiano from which the sport which has given rise to this discussion emerges is trained in the usual way under the glass of a lean-to vinery, and that about the middle of its length it gives off three fruit bearing spurs which we shall have to refer to specially. Below these three on either side of the rod are borne some six or eight bunches of Trebbiano, about three parts ripe at the time of our visit.

It is then to three special shoots or spurs that we desire to draw attention. The lowermost of the three is the original one which in the year 1874 bore the bunch of Golden Champion, or one which was so like Golden Champion as to be taken for it by experienced Grape growers and amateurs, of whose good faith and competence not a shadow of doubt can possibly be entertained. The base of this spur still bears the label which, as we were informed, was attached to it by Dr. HOGG on the occasion of his visit. At the present time this shoot bears leaves which are indistinguishable from those of Trebbiano, but the bunch and its constituent berries, in form, in size, in stage of maturity, in tendency to spot, are unquestionably much more like those of true Golden Champion, growing close by in the same house, than they are those of the Trebbiano produced on the same rod, even when all due allowance is made, as it should be, for variation in individual berries. Incidentally, it may be remarked that the individual berries of Golden Champion exhibit a considerable range of variation. The bunch in question, as we learn from Mr. GRIEVE, measures 10 inches across the shoulders and 10 inches in length, exclusive of the stalk. The berries, at the time of our visit, were not quite ripe, and had not yet the pale amber tint of other Golden Champions in the same house. This may to some extent be attributed to the circumstance that the sport occupies a more shaded position than the fruit of the Champion rod, which grows close to the light at one end of the house. We may assume, however, that the general appearance of the sport is much the same as it was in 1874; indeed, such is the testimony of Mr. GRIEVE himself, and of others who have seen it in both years.

Next we come to the middle bunch of the three to which we desire to call attention. This is borne on the same side of the main rod, and on the next spur but one above the first mentioned. The leaves on this spur are in all essentials like those of Trebbiano and not those of the Golden Champion. The bunch measures 9 inches across the shoulder, and is 8 inches long, and its constituent berries, as compared with those of adjacent Trebbiano and Golden Champion respectively, are distinctly intermediate in character. They are smaller than Golden Champion and larger than Trebbiano, and in all ways appear to hold a middle position between the two. It may be mentioned that the largest bunch of Trebbiano proper measures 7 inches across the shoulder by 12 inches in length. We look upon the production of this intermediate bunch as a most important link in the evidence, though somewhat singularly Mr. GRIEVE made no mention of it in his last letter, and we presume a similar one was not produced on former occasions.

The third or topmost bunch on the same side as the two before mentioned hardly deserves notice, except for the fact that the terminal berry is more like one of Golden Champion than of the Trebbiano. On the other hand, it must be borne in mind that the terminal berry of the bunch is very often larger and of a different shape from the rest, the difference frequently being consequent upon a fusion or growing together, Siamese-twin fashion, of two or more berries. This did not appear to be the case in the bunch under consideration, whose terminal berry seemed to have, as we have said, a good deal of the Golden Champion character, and will probably develope still more in this direction as it ripens. We think, then, that we are justified in stating that this third bunch presents, like the two lower ones next next adjacent to it, but to a much smaller extent, the characteristics of Golden Champion.

Speaking, therefore, in general terms of the Vine in its present state, it may be stated, 1st, that the foliage on all three of these spurs is indistinguishable from that of Trebbiano (except in one minor point to be hereafter mentioned); 2d, that the bunch of the lowermost spur resembles that of Golden Champion very closely, indeed so much so that, were it not that the berries are not so mature as those on the Golden Champion adjoining, we should have had no hesitation in pronouncing them identical; 3d, that the middle bunch of the three is intermediate between Trebbiano and Golden Champion; and, 4th, that the third bunch, while almost entirely of Trebbiano character, has its terminal berry of a different shape and size to the rest, and in this point resembles Golden Champion.

We have now to mention some points of distinction between the foliage of Golden Champion and that of Trebbiano. Of course a large allowance must be made for variations in size, colour, hairiness, &c., according to the position of the leaves on the rod, and other circumstances so familiar that we need not take up time by further alluding to them. Setting aside these variations, there appear to, us from the comparisons we have been enabled to make, two special points in which a difference is clearly observable between the foliage of Trebbiano and Golden Champion. In Golden Champion, as a rule, the leaf-stalk is rather shorter in proportion to the leaf-blade than it is in Trebbiano, and the lobes of the leaf, as well as the smaller toothings of the margin, are narrower and more sharply pointed in the Champion than they are in Trebbiano. In other words, the teeth of the leaf in the Champion are deltoid Δ or triangular, with nearly straight sides, while in the Trebbiano the teeth are broader and with curved sides, so that they have an egg-shaped, pointed outline. As we have said, the leaves on the sporting spurs appear to us—regard being paid to individual variation—to be precisely those of Trebbiano, with the minor exception that in the relative length of the leaf-stalk and of the blade they approximate more nearly to the character presented by the Champion. As to the bunches and berries, speaking now entirely from those to be seen in the same house at Culford, we may say that Golden Champion, as compared with Trebbiano, has larger bunches with wider shoulders, the individual berries are also larger, have stouter footstalks, ripen earlier, are more amber-coloured, and have the constitutional peculiarity of spotting.

We are quite well aware how wide a margin must be left for natural variation according to circumstances. The variation in size and form of Grapes in the same bunch is, of course, a matter of very frequent observation. We can also quite well understand how even an expert may be deceived in certain cases by an unusually fine or an unusually poor condition of a particular Vine, and so be led to identify it wrongly; but that is a very different case to the production of one or more sports on a rod bearing several normal bunches.

The conclusions that we have arrived at, therefore, are that the Culford sport—we may now say sports—are real, and not fanciful; and that in the character of the bunches and berries one of them shows the characteristics of Golden Champion to such an extent as to justify the observer in pronouncing it to be all but, if not wholly, identical, the differences now observable in size of berry and period of ripening between Trebbiano and the sport being trifling.

After all, it is to us surprising that this case should have been received with so much incredulity. One would think analogous cases had never been noted, that the Cytisus Adami was unknown, that Peaches and Nectarines had never been seen on the same bough, and that "sporting" or bud variation, in fact, was an unknown phenomenon. The special interest in the present case arises from the fact that the rod of Golden Champion had been cut away before the appearance of the sport.

The question then becomes narrowed to this—are the "sports" now existing on this Vine the result of previous inoculation with Champion sap or with Champion pollen, or are they altogether independent of Champion influence? Seeing how strikingly the Champion characteristics are reproduced in bunch and berry, we can but conclude that they have been so to speak Championised, and that the case is one of those exceptional instances where graft hybridisation has been brought about.

loosely wind the shoots will be found sufficient. Tetratheca verticillata is another easily managed, almost continuous-flowering plant of moderate growth; its distinct, non-formal habit and equally distinct freely produced flowers alike fit it for standing in front of larger subjects in the greenhouse and conservatory. Plants that were slightly cut back after the spring blooming will again now be in full flower and continue for some weeks; if placed in a conservatory they should have a light situation.

Phœnocoma prolifera.—Plants that set their blooms late will for some time yet be fresh and effective, but when employed for conservatory decoration care must be taken that the flowers are not wetted should the syringe be used, or they will at once turn mouldy. Croweas will now be fast coming into bloom, and will keep on if well managed almost to the end of the year: they are somewhat subject to scale, and before the flowers open the insects should be removed by sponging, or else they soon get the leaves into such a dirty condition as to mar the appearance of the plants. The yellow flowered Cassia corymbosa will, from the uncommon colour of its blooms amongst hard-wooded plants, and its long continued flowering, be a useful addition to the conservatory; whilst here it will bear standing in positions where it will receive less light than most things. Desfontainea spinosa, grown in pots, and that has been exposed in the open air through the season, will now begin to open its attractive pendent, long-enduring flowers. It likewise, for many weeks, may be stood close to, or under, other larger glowing subjects. The red-flowered Leschenaultia formosa and L. intermedia are amongst the most useful small plants that can be used for standing on brackets, or anywhere near the front of conservatories, yet how seldom do we now see them. They keep on blooming incessantly almost the whole year round. There are few things more easily grown. The principal matter to attend to is not to let them get affected with greenfly, to which they are somewhat liable, and on them it attains so small a size as to often escape detection. Where Witsenia corymbosa is grown into moderate sized specimens, its exquisite blue flowers will now be produced in succession for many weeks; this plant also bears a confined situation without suffering much injury whilst it is blooming. The above are a few hard-wooded plants that give variety for conservatory decoration during the autumn months, yet in the too general disposition evinced now to use a preponderance of ornamental leaved subjects with few flowering things to assist them except the easiest grown soft-wooded plants, there are numbers of the most deserving old favourites lost sight of. The want of variety in the species of plants now generally met with through the autumn months in greenhouses and conservatories rob these structures of one-half the interest that would be attached to them were greater variety employed.

Mandevilla suaveolens.—Where this most useful and fragrant climber is grown it will either now be in flower or shortly begin to open; the reason why it does not succeed with many people is through its leaves becoming a prey to red-spider, to which it is more subject than many things; nevertheless from its distinct and beautiful character it should not be discarded on this account, as if well washed with the engine or syringe once a week it can be kept perfectly clean. It forms a charming contrast to Lapageria rosea, and where it has attained sufficient strength will keep on blooming till the middle of October or later. The use of the syringe should be continued whilst in flower so long as there is solar heat enough to give vitality to the insects.

Heaths.—Any plants of these that have deficient root-room should at once be potted. The principal advantage derivable from moving Heaths at this time in preference to the summer immediately after blooming, is that they are much less likely to suffer from the effects of the operation than when it is carried out whilst the weather is hot; this is more especially the case when the balls of the plants are very full of roots, and consequently have become matted to a considerable extent against the sides of the pots. Do not by any means disturb the roots further than removing the drainage from the bottom, and ram the new soil so as to make it thoroughly solid. When the potting is completed at once place them in a pit, or house, where they can be kept a little close for two or three weeks, but if the operation is carefully performed there will be no occasion for shading unless the weather is more than usually bright, as from the moist condition of the air in most parts of the country, consequent upon the recent more than ordinary rainfall we have had, they will not suffer as during a drier time. *T. Baines.*

FRUIT HOUSES.

Pines.—The advent of the autumnal months, with the concurrent atmospherical changes which naturally arise, will necessary entail more diligence in the way of airing the plants in this department, and not only so, but more foresight will also be needful towards sustaining with regularity a proper degree of heat in the houses when that arising from natural sources is defective. In the case of this particular section of plants, at this season, the greater part of them will be in a very active state of growth and full of vigour. Under such circumstances every proper means should be taken advantage of to harden and consolidate it before the short dull days of winter arrive, and particular care should be exercised so as to avoid extreme variableness of temperature in the houses, as this is in general somewhat detrimental to the plants, and particularly so with regard to those which are not wanted to show fruit yet, its effects oftentimes resulting in starting the fruit prematurely. Every care should consequently be given to this matter, especially in relation to plants of the Queen variety, as if this section start into fruit at this period of the year it is disastrous, inasmuch as they are not suitable for the purpose, and, moreover, in point of quality at the time they would ripen would not be at all comparable to other more suitable kinds for that purpose at that period. Assuming that at an early date all the fruiting plants will be brought together where they can have a good supply of heat and plenty of sunshine when its exists, with a corresponding amount of moisture supplied about the house to keep its temperature genial and invigorating—at 75° daily, by fire-heat 90° at the roots, 80° to 90° by sunshine, with air on the house, and 70° at night—remove all the suckers from the plants before they get large, save one for stock, and keep the fruit free from moisture during the flowering process. The set of plants which is intended to succeed the foregoing should consist for the most part of the Queen variety, as this sort is eminently suitable for the purpose. These plants should receive careful treatment during the period of rest, which should terminate about the middle of November next. For the present about 68° at night as a mean should rule, with 5° more daily if required by fire-heat, and 80° at the roots constantly. Open the house slightly at from 75° to 80°, and freely ventilate at the latter degree, closing up the house finally for the day at 76°. If during very fine weather the axils of the leaves become dry give a slight sprinkling overhead with the syringe, but avoid having a superabundance of moisture constantly in the house. In the case of later plants which are to be kept growing on for another month or six weeks, a temperature slightly in advance of the preceding temperatures should be permitted with an increased amount of moisture in the house, and those plants which are to be wintered in 7 or 8-inch pots need only be slowly advanced. *G. T. Miles, Wycombe Abbey.*

Orchard House.—All the early and midseason Peaches and Nectarines from which the fruit has been gathered, may be removed to the open air. If infested with any kind of insects let them be thoroughly cleansed at once, and afterwards keep the foliage clean by means of the syringe or garden engine on fine evenings. Early in September, when the foliage shows signs of ripening, the roots should be examined, and if repotting is necessary the operation may be performed without delay. Guard against large shifts, as medium-sized pots well filled with roots always give the best crops of fruit. Trees in pots sufficiently large may have a large portion of the old soil removed, the roots shortened back, and be returned to clean pots of the size they now occupy. In potting fruit trees, perfect drainage must be secured. Strong turfy loam from the limestone, with a liberal admixture of burnt earth, or old mortar and bone-dust, will form a suitable compost; use it in a dry state, and ram firmly into the pots, as for Melons. Give sufficient water to encourage the formation of new roots, and expose the pots to the genial influence of autumn sunshine. Having disposed of the early batch, a re-arrangement of the house will be necessary and beneficial to the late kinds, which may be set out thinner. Remove all young growths, and turn aside old leaves which in any way interfere with the colouring of the fruit, and secure ripe wood for another season by keeping the trees under glass until the leaves fall. Encourage Figs now ripening with heat, liberal ventilation, and full exposure of the fruit to the sun. Guard against atmospheric moisture, but give liberal supplies of moisture to the roots. Examine Cherries which have been some time out-of-doors, and providing they do not require larger pots see that the drainage is perfect. Remove a portion of the surface soil well down the inside of the pots, and topdress with loam and bone-dust.

Cucumbers.—The wet, sunless weather has been against free, firm growth, and plants raised from cuttings or seeds in the early part of August will be somewhat later than usual, and liable to flag under bright sunshine; where this is the case a very slight shade may be laid on for a short time, until the foliage becomes stronger. Train straight up the trellis, remove all male blossoms, and defer stopping the points until three-fourths of the allotted space has been filled. Autumn-fruiting plants will require less shade and moisture as days decrease in length; the young growths should also be kept thinner, and if all surplus or ill-placed fruit are removed the bearing period may be greatly extended. Make another sowing for giving a supply of fruit from Christmas onwards, and make the last sowing about the second week in this month for carrying on into the spring. Where the houses are divided into compartments the raising of young plants should be regulated by the dates on which existing crops of Melons or summer Cucumbers are likely to be exhausted, young plants being always preferable to those which have become pot-bound. Push on the cleansing and painting as the pits are cleared, in order that there may be no delay when the time for planting arrives. If fermenting material is used for bottom-heat, no time should be lost in getting together a supply of Oak leaves and horse-dung, or, failing this, Oak bark, which, having been prepared by fermenting and turning in a dry, open shed, may be used as a good substitute. *W. Coleman, Eastnor Castle.*

KITCHEN GARDEN.

The late rains have proved very acceptable in this part of the country, where we were beginning to suffer from the effects of long drought; and where the necessary plantations of the various crops have been persistently carried out they will now grow away vigorously. Before they become too large it will be necessary to stir the soil deeply, and draw the earth up to the stems of any of the Brassica family requiring it. Buda Kale and Coleworts for spring may still be planted, but no time must be lost. A large breadth of the various sorts of Endive before recommended should now be got out at once; this will form the main supply for autumn and early winter purposes and for storing, but unless a very severe winter sets in a plantation made later on, in ground not too richly manured, will be found better adapted for winter use; but the ground for the present and largest plantation may be very liberally manured, in order to induce a free and constant growth. A large breadth of the various Lettuces should also be planted out at once, and encouraged by liberal treatment. The Old Bath Brown Cos should enter largely into this crop, as it is the best for taking up and storing for winter use. Plants intended to stand through the winter should be left a while longer, but it is a good plan now to make a sowing on a warm sheltered border to stand through the winter for planting out in the spring. For this purpose the bed should be larger than usual, and the seed thinly scattered; or if necessary they must be thinned out in good time, as the object is to secure a good short stocky growth of plant; the Bath Cos and hardy green Cos are good sorts for this sowing. The tying of Endive and Lettuce for blanching will require attention, as it must only be performed when the plants are perfectly dry; in catching weather this is sometimes neglected, and the result is a mass of putrescence inside when they come to be cut for use.

Onions should now be ready for harvesting; they should be taken to the store-room when perfectly dry, but as the ground will be wanted at once if the Onions are not ready they may be laid out in open sheds for a few days, and then stored. The ground should be cleared of rubbish, liberally manured, and trenched up two spits deep in readiness for Cabbages to stand through the winter. This in most cases is an important crop, and will require extra care in the manipulation. Let the ground remain roughly thrown up for a few days, then break it down level, and plant at 20 inches each way. This is quite near enough for the winter sorts; summer sorts may be planted nearer, as they are off and gone as soon as ready, and many plant the winter crop double thick and pull out every other plant for greens in the spring, but this practice is "more honoured in the breach than in th' observance," as the greens are but poor things at the best, and the ground ought not to be robbed when succulent and tender-hearted Cabbages are required and appreciated. After selecting all the best plants for the bed the remainder should be lifted, and pricked out rather closely in beds for stores to fill vacancies, and for early planting in spring. At the same time a bed should be sown soon to supplement them: these must remain in the seed-bed all the winter. Spinach beds for winter will now be ready for thinning out, which should be done before the plants get drawn. If the ground is good, and the plants likely to grow strong, from 10 inches to a foot is not too much to allow the plants. The earthing-up of Cardoons and Celery must now be diligently followed up in perfectly dry weather. At the same time plentiful applications of water and liquid manure must not be forgotten. This should not be poured down the centre of the ridges over the plants, but into the small trenches outside of the ridge. Turnip Radishes should now be sown every fortnight for two months. If a bed for very late Turnips is not sown not a day should be lost, and advancing crops of these should be constantly thinned out as soon as ready, and the ground stirred amongst them. Thin out autumn-sown Carrots as soon as ready. Nothing weakens plants which have to stand the winter so much as leaving them drawn up weakly in the seed-bed. The only remedy is to thin in time. *John Cox, Redleaf.*

0 1 2 3 4 5 6 7 8 9 10
cm
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Missouri
Botanical
Garden

Mam. Nuttallii

St Louis

May 1862

1190

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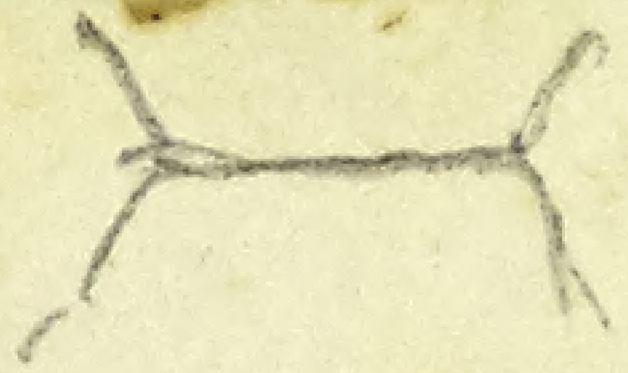
GARDEN

funiculus



top of embryo
showing parallel cotyled.

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M. Nuttallii Engelm. smaller, globose simple or sometimes cespitose & with fewer (about 20) straight ashcolored spines, yellow flowers (1-2 inch in diam), scarlet subglobose berries and few large globose black pitted seeds is common in the eastern slope of the (Colorado Mountains of ...), and may be looked for in western Utah.

1191

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(1–2 inches Torrey)

M. Nuttallii Eng. small, globose, simple or cespitose, 1192
with cylindric tubercles, bearing 10–17 straight radiating spines
with or without an erect straight central one; flowers yellow, 1–2
inches in diameter, with fimbriate sepals and lance linear petals;
scarlet berry round or obovate, with few large globose black pitted seed
eastern Colorado

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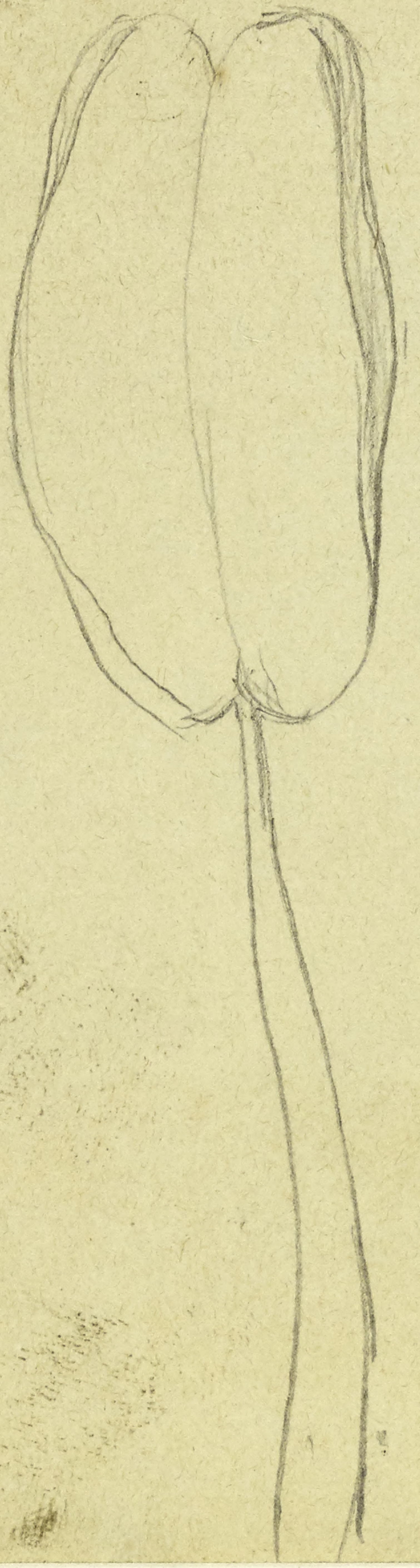
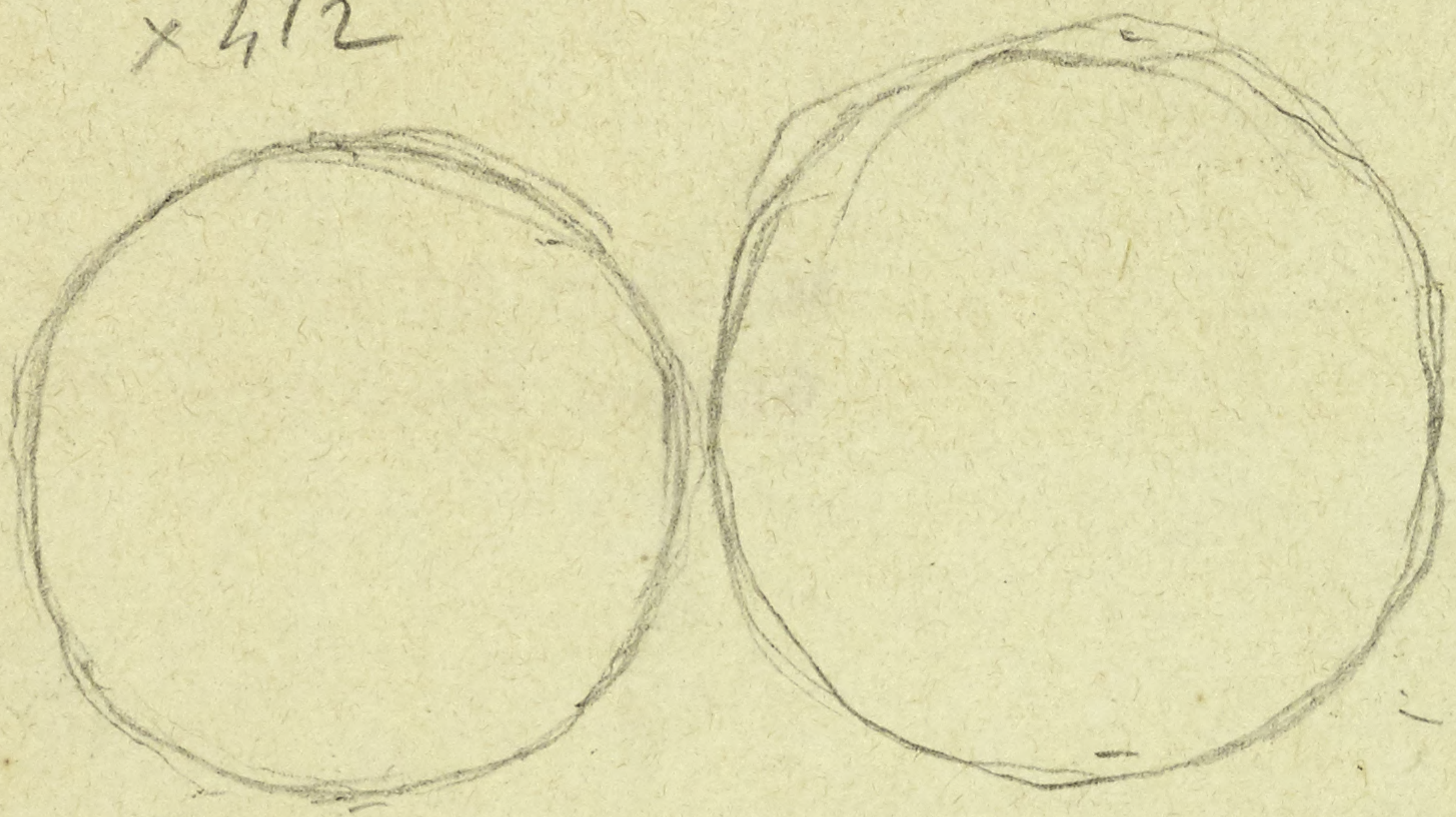
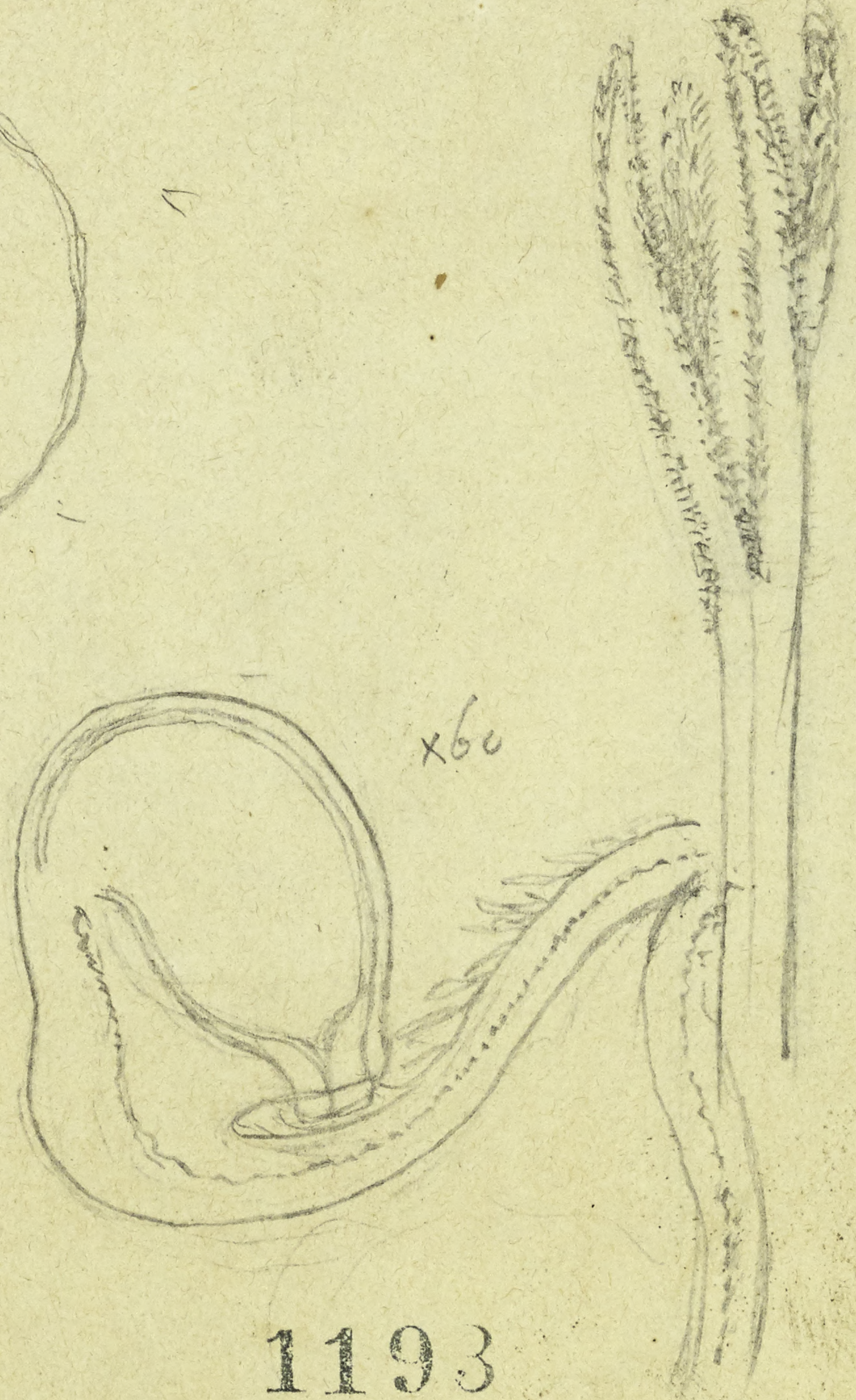
Mam. Nuttallii
fr upper Missouri

May 1861




x 412
Pollen


x 60
x 10
4 stig-
green

1193

M. W. ALEXANDER,
SOUTH-EAST CORNER FOURTH AND MARKET STREETS,
ST. LOUIS.

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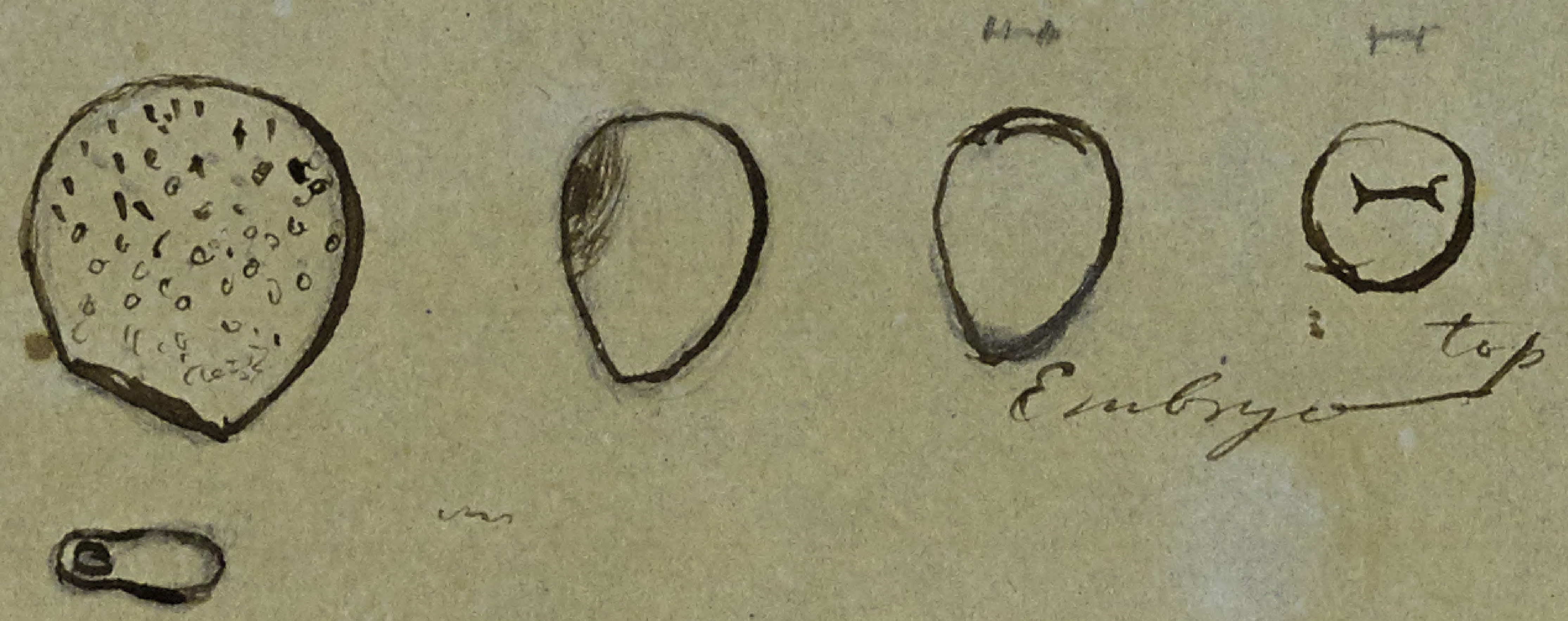
7.

M. Nuttallii

see VIII. 2



June 1854

1194

fruit 4 l. long, subglobose
seed 0.07 rarely 0.08 l. long
albumen white compressed
membranaceous with a dark
central spot, thin

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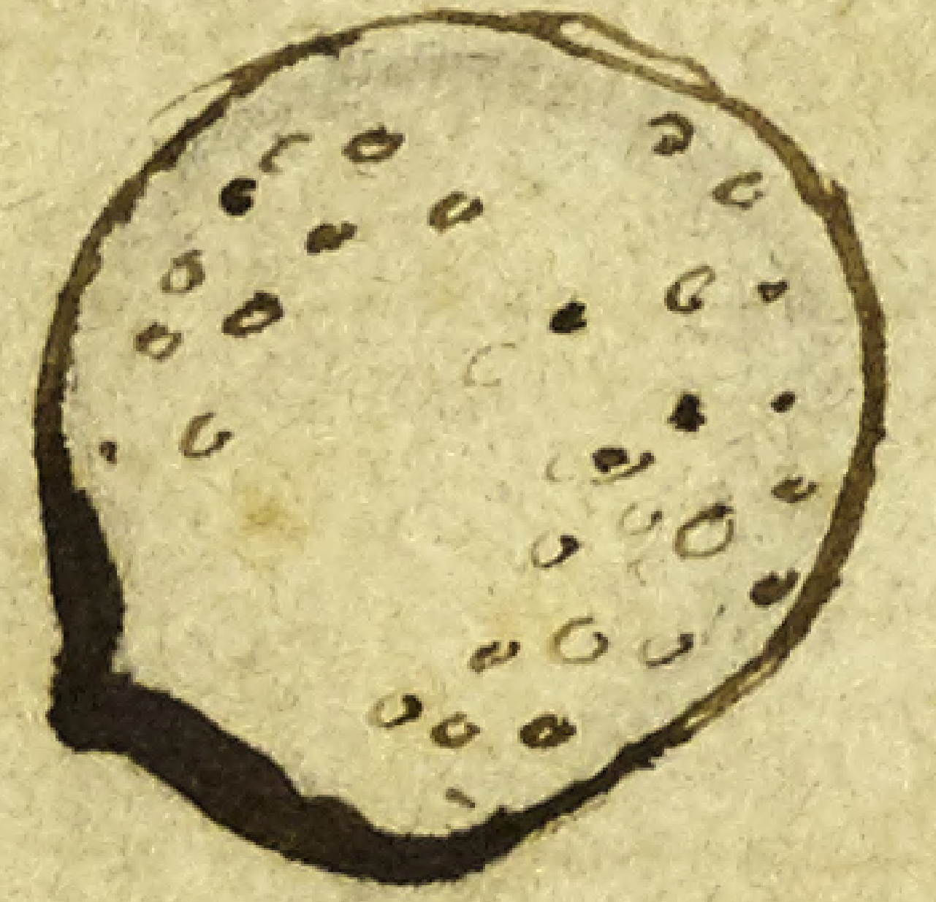
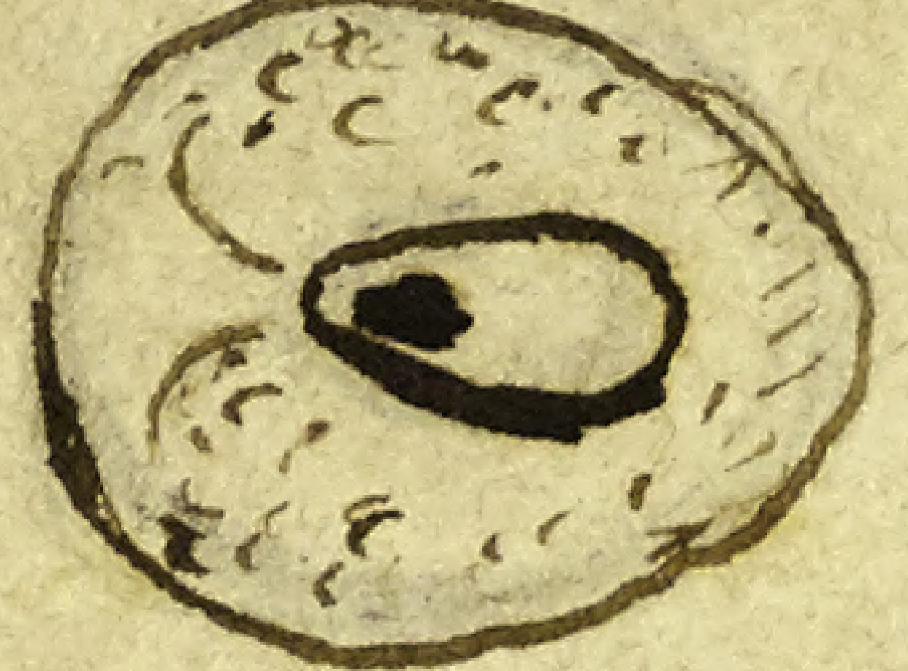
3. Mammillaria
similis
Texas

See VIII. 3


side view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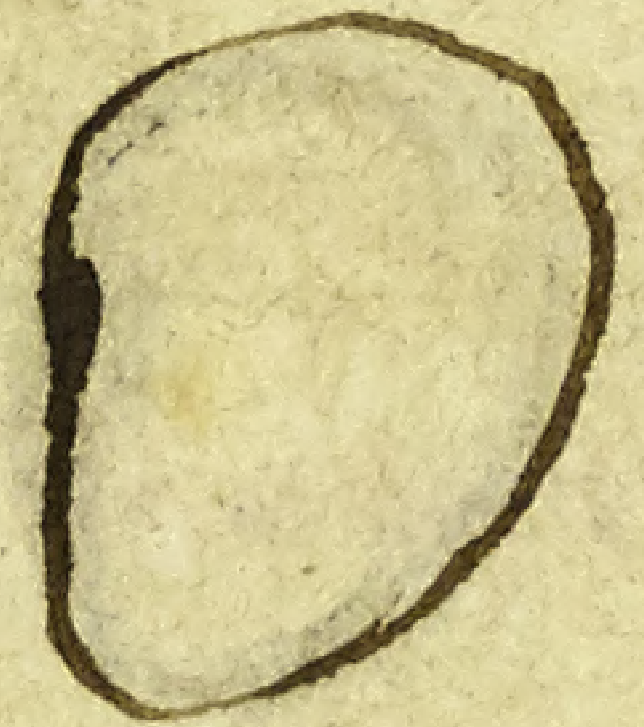

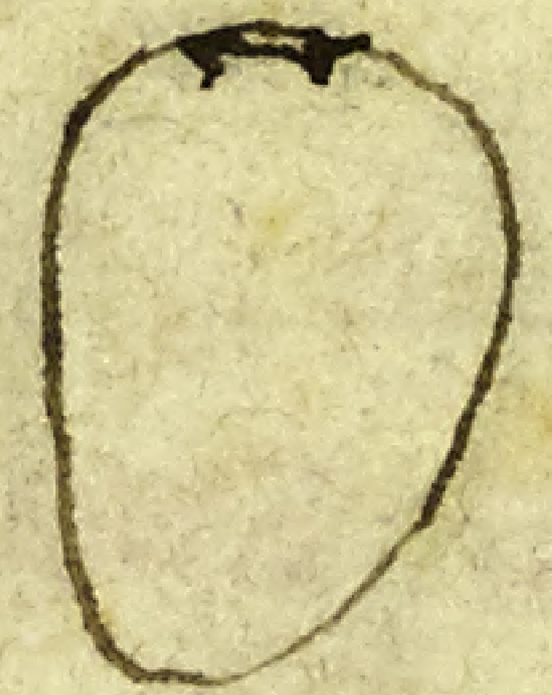

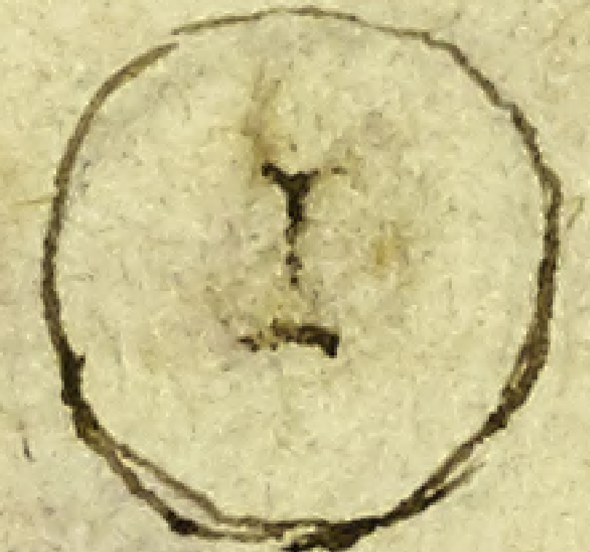

semen exalbuminosum embryo rectus
cotyl. subnulli margine chalazae
spectantes

1195

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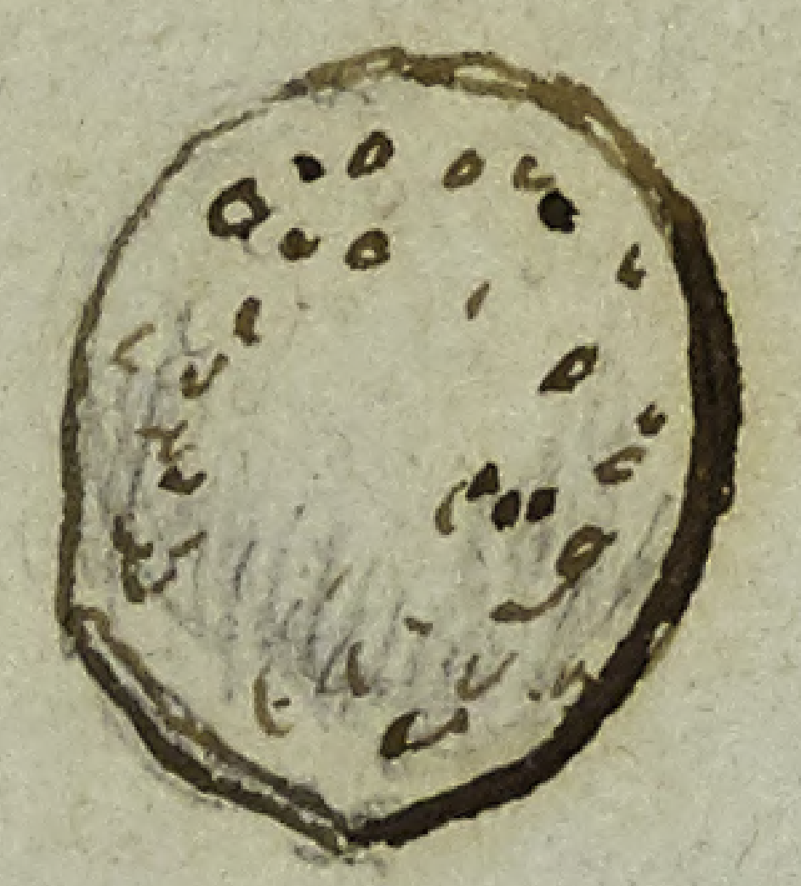
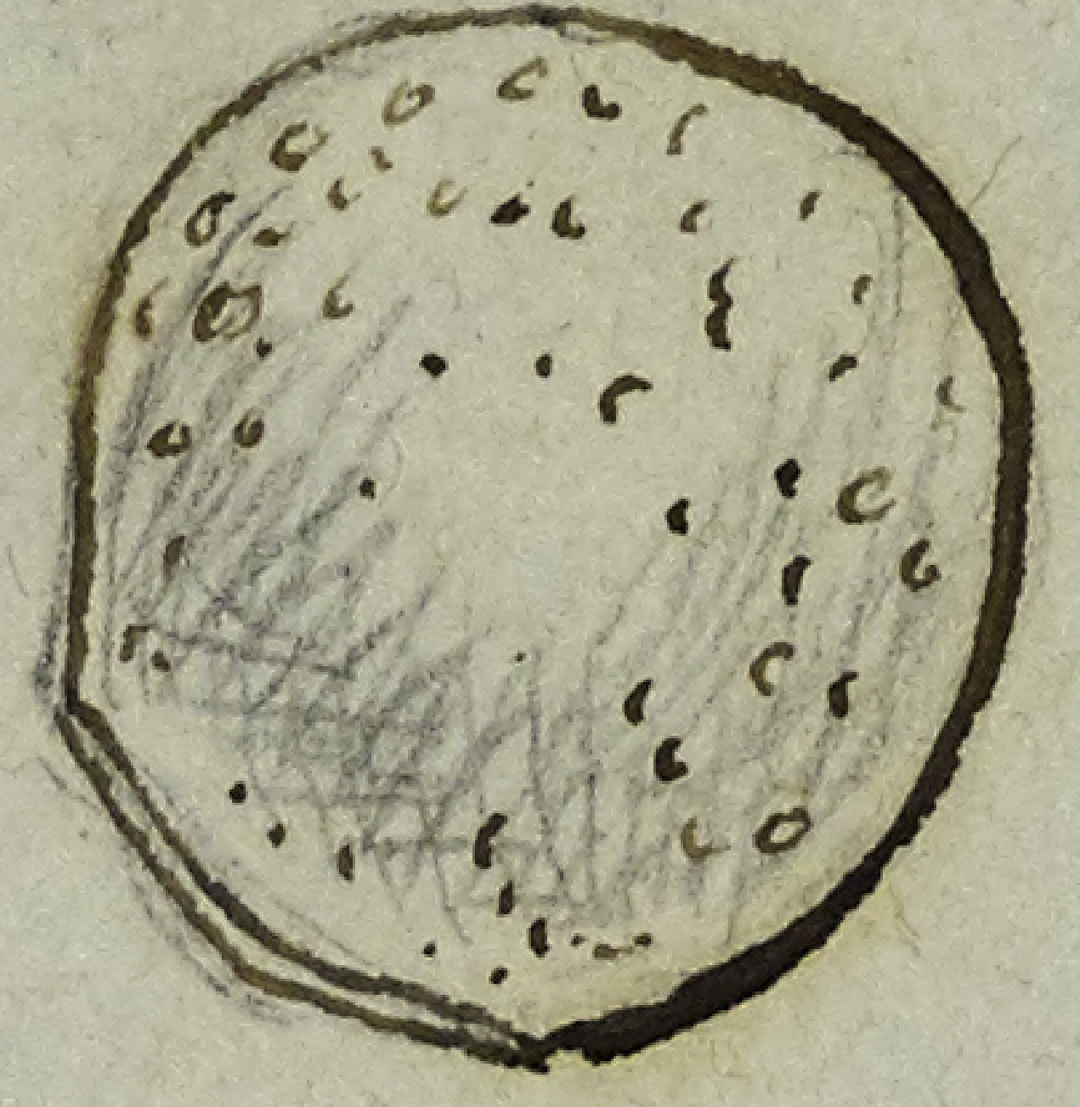
2. Mam Nuttallii
see V. 7.



Seed 0.7 – 0.8 long, subglobose – black pitted – hilum oblong, basilar

1196

3. Mam similis
see III. 3



Seed 1.0 – 1.1 long, similar to last hilum linear oblong – pits as large as in the last

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June 1872

1197

Mammillariae coryphanthae in Labouret Cactées 1853

pag. 122 „Praesulcatae"

		colour & size of flowers	native country
	* Glanduliferae † elongatae		
150	M. Clava Pfeiff. 1842	6 cent. sulphur yellow	Mexico
151.	M. erecta Lem.	7 cent citron yellow	Mexico
152	M. macrothele Mart	3 cent yellow with some red	Mexico
153	M. Schlechtendalii Ehrenb.	6 cent. straw yellow	Mexico
154	M. Plaschnickii Otto		Mexico
	β M. sulcimamma Pfeiff. 1838		
155	M. raphidacantha Lem.	3 cent. yellow with some red	Mexico
156	M. heteromorpha Scheer		
	†† Obtusae		
157	M glanduligera Hort.	large yellow	
158	M Ottonis Pfeiff. 1838	4 cent white	Mexico
159	M brevimamma Zucc.		Mexico
160	M Asterias Cels		
161	M cephalophora Salm.	yellow	Mexico
	** Aulacothelae		
	† ~~grooves very woolly~~		
162	M. scepontocentra Lem.	yellow	Mexico
163	M sulcolanata Lem.	„2 cent, large" yellow	Mexico
~~164~~	~~M acanthostephes Lem. 1835~~	5–6 cent. yellowish & rose	Mexico
165	M elephantidens Lem. 1842	8 cent. rose red	Paraguay?
166	M Winkleri Forst. 1847	4 cent. red & orange yellow?	
167	M pycnacantha Mart.	5 cent. yellow with red streak	Mexico
	†† Inner spines curved		
168	M cornifera DC.	"dirty red" [yellow]	Mexico
169	M calcarata Engel.	yellow	Texas
170	M scolymoides Scheidw. 1841	5–6 cent. yellow with red base	Mexico
	††† inner spines straight.		
171	M macromeris Engl	8 cent. rose	N. Mexico
172	M. dactylithele Lab. 1853	„	Texas
173.	M. Scheerii Muehlenpf. 1847	5 cent yellowish with red	Chihuahua
174	M Salm-Dyckiana Scheer. 1850		Chihuahua

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In other parts of the book I notice the following Mamillariae which probably or certainly belong to Coryphantha.

? 81	M sphacelata Mart.		small red	Mexico
82	M Pottsii Salm		red	Mexico
83	M strobiliformis Scheer.		red.	Mexico
87	M conoidea DC	3 cent.	purple	Mexico
88	M radians DC		yellow	Mexico
? 89	M loricata Mart		yellow	Mexico
90	M radiosa Engl	large	purple	Texas
91	M similis Engl	large	yellow	Texas
92	M vivipara Haw	large	purple	Missouri

34 species, of which 23 are known in flower, and 11 unknown.

Of these 23 1. (No 158) is said to have white flowers

6 rose or purple flowers

16 yellow or yellowish red ones [turning red in fading or red base]

probably 3 more red and 3 more yellow ones in the list will make 1 white 9 red 19 yellow = 29 out of 34

prevailing colour of Coryphantha flowers is yellow, 2/3 yellow and less than 1/3 red or purple.
rose

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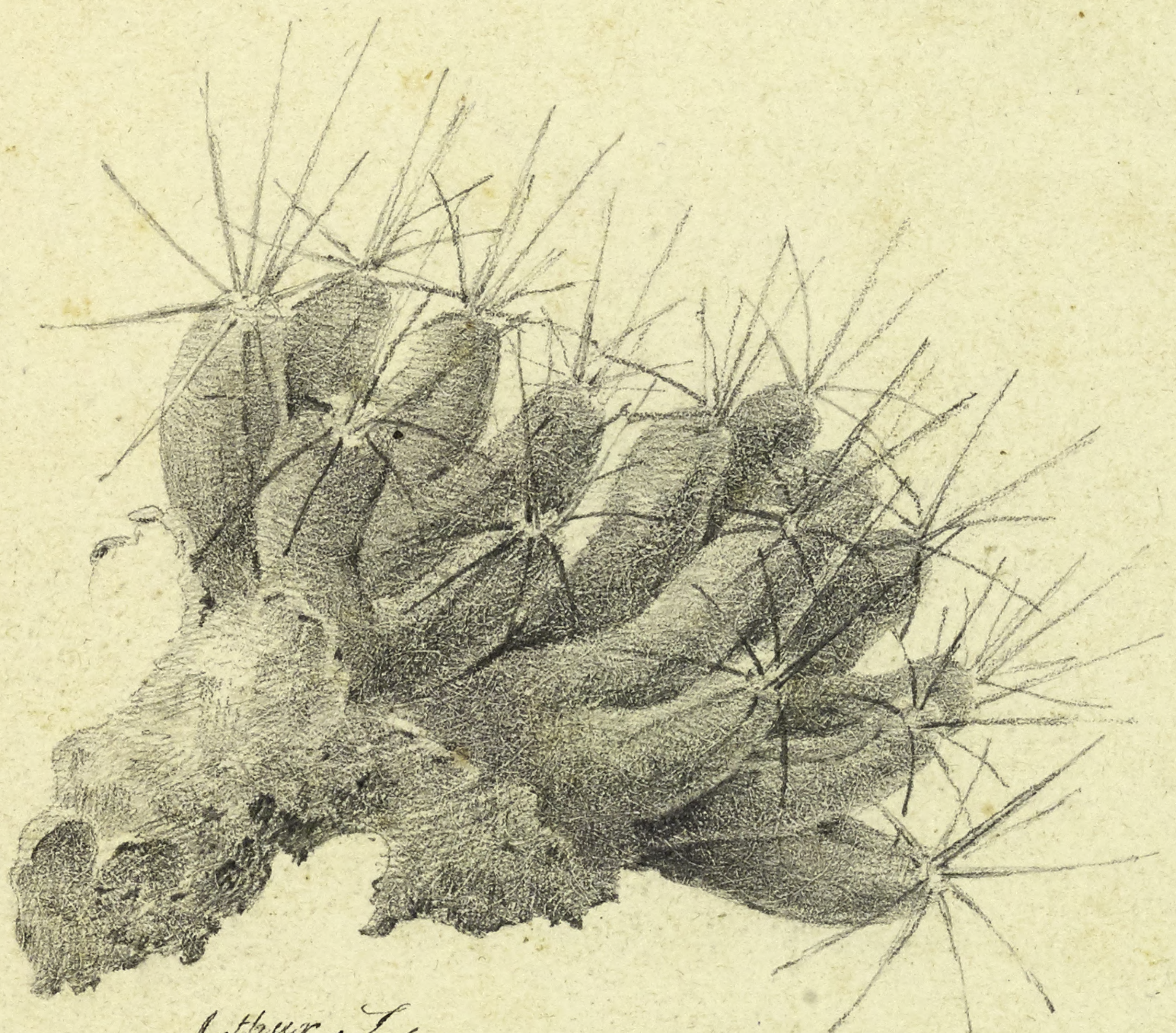
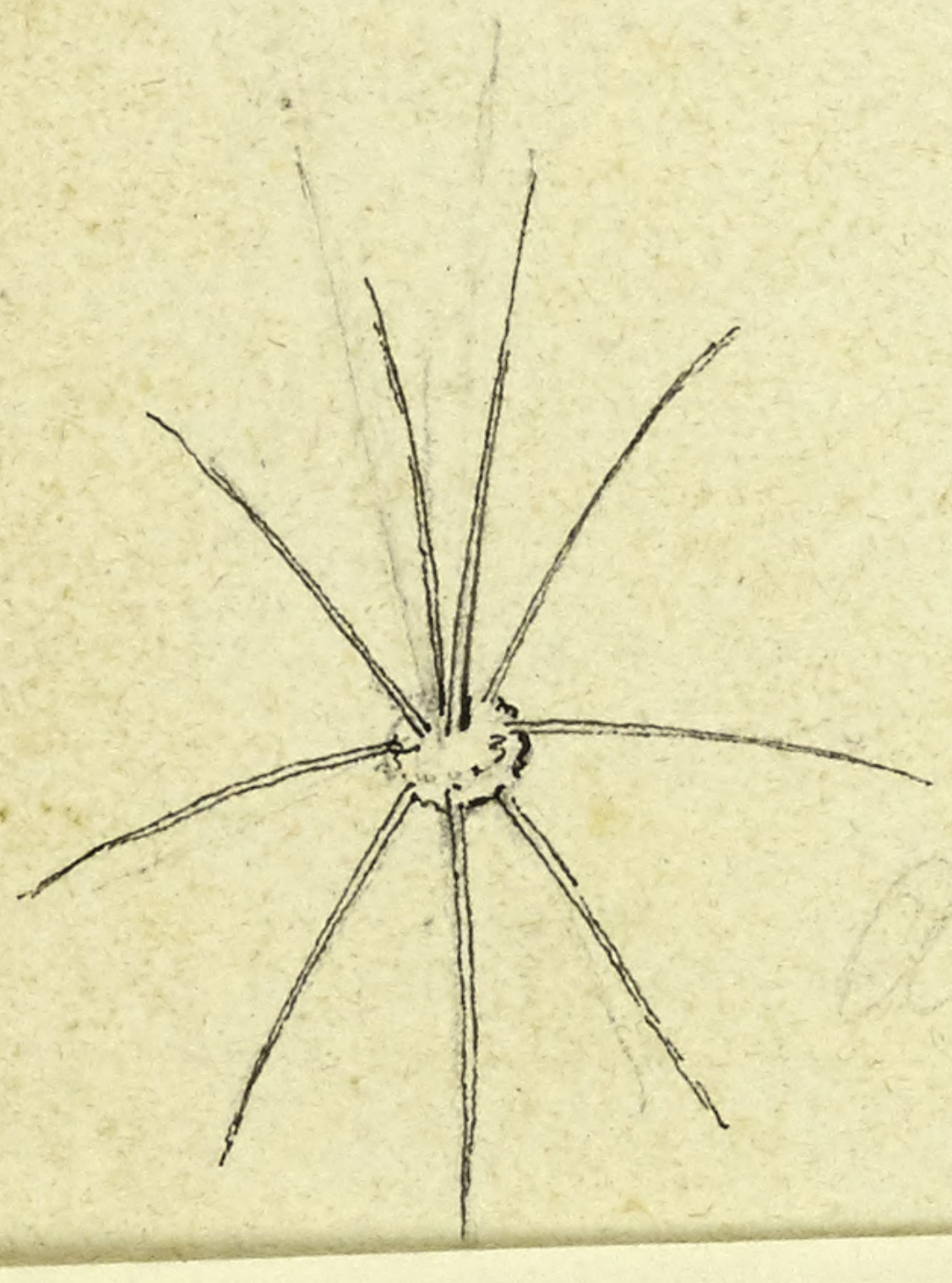
No 11

1198



Arthur Schott del.



Cretaceous rocks 1199

KENT

macromeris

No 11. Mammillaria? I saw this species only on the arid ragged hill slopes of the shady bluffs not far above Mier. The plant is creeping and seems to be more inclined to decay than any other cactus in this country except No 8.

Natural size of one branch.

0 1 2 3 4 5 6 7 8 9 10
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MISSOURI BOTANICAL GARDEN

George Engelmann Papers Box 4
Notebook 5
Folder 12

Texas.
Rio Bravo del Norte.
Shady Bluffs above
Mier on
Cretaceous rocks.

Kew Aug 1869

Mam. Clava Bot Mag. 4358. yellow flow
8 or 9 cent diam 6 yellowish stigmas
petals emarginate. cuspidate or
aristate — trunk 8 c diam

~~Mam floribunda fl. subapical ? 4 c. diam.~~
~~rose-color. Bot Mag. 3647~~

1200

~~M. pycnacantha Bot Mag. 3972 vol 69~~
~~1843~~

~~Orange yellow flowers~~

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